THE TIMES
Higher Education
SUPPLEMENT

Local authorities to review CDP's future

by Judith Judd

Local authorities are to review the future of the Committee of Directors of Polytechnics after the decision of the Inner London Education Authority to cut off its funds.

The Association of Metropolitan Authorities and the Association of County Councils will look at three alternatives. One would be the closure of the committee, another would be to fund it from the rate support grant before it was distributed and the third would be a levy on individual polytechnics.

Mr Peter Sloman, education officer of the Association of Metropolitan Authorities, said ILEA's action had called into question the present arrangements for funding the CDP. "There is a sense in which they are anomalous", he said.

ILEA's further and higher education sub-committee voted at its last meeting not to pay the first instalment of the annual grant of £36,000 which was due on July 1.

Its reason was anger at the submission made by the polytechnic directors to the Oakes inquiry into higher education which argued for the removal of polytechnics from local authority control. Another reason was annoyance at the CDP's attempt to prevent the release of a report prepared by polytechnic finance officers on polytechnic costs.

The confidential report was leaked to *The THES*. When the finance officers decided to publish it their decision was condemned by the CDP.

Commenting on the ILEA decision, Mr Sloman said the decision to stop the grant was nothing to do with academic freedom as the CDP had suggested. "Why should you pay the chap who wields a stick to beat your back?" He said the local authorities would decide their position as soon as possible. There was no question, he thought, that the grant would be cut off just like that.

The authorities have never much liked the present arrangement under which ILEA charges the money it pays to the CDP to the pool. Some local authority representatives will certainly argue in favour of the CDP's closure on the grounds that it performs no useful function.

Another possibility would be to finance it as the Schools Council and Coombe Lodge, the further education staff college, are financed under the Local Government Act 1974, though no officers' body is at present financed in this way. This would mean that the ILEA had no veto over its actions.

In answer to a question about the case from Dr Keith Hampson, MP for Ripon, the Government said that Parliament had no direct responsibility or control in the matter.

Dr Hampson said that, although this was technically the position, the Government should condemn the political bullying of the ILEA which was totally inappropriate in British higher education.

Arts faculty says Mr McColgan will not face further review

Proposals to sack Sheffield lecturer Mr Michael McColgan will not be revived, despite a decision by the university senate that the case should be reviewed in two years' time.

The senate endorsed the recommendations of a six-man committee set up to examine Mr McColgan's record. These were that he should continue to be held at the efficiency bar, but that the resolution from the faculty of arts that he be dismissed should not be accepted.

Mr McColgan's appointment was not to be reviewed until October, 1980, unless he wished to bring forward new evidence of research in an earlier attempt to pass the bar. The committee's report explained that failure to improve his research record "would lead to termination being the most likely outcome of that review".

However, Professor Peter Nidditch, dean of the faculty, said this week that the matter was now closed since it would be wholly wrong to "leave the sword of Damocles hanging over him". Any recommendation on staffing could only emanate from the faculty, which intended to stand by its previous decision that inadequate research should not be grounds for Mr McColgan's dismissal if he was allowed to continue in his post as a lecturer in Germanic studies.

Mr Francis Orton, who is shortly to take over as registrar, said there was no disagreement over the senate decision since it had only been decided that Mr McColgan would have to produce more research to pass the bar. "The case will be looked at on its merits in two years' time and I cannot forecast anything that is going to happen then", he said.

The committee accepted that two articles accepted for publication and a lengthy piece of translation did not satisfy the minimum requirements of quality to pass the bar, although they represented sufficient quantity. Taking into account Mr McColgan's record of teaching and administration, it was not felt that it would be in the university's interests to dismiss him. Another committee is to discuss the general principles surrounding the case.

Mr McColgan welcomed the decision as a victory for the public pressure but felt that questions remained to be answered about what constituted proper research and how such cases should be conducted. He still felt it was unjust that he should be held at the efficiency bar, a situation which has existed since 1970.

Leader, page 27

CNAA backs new regulations

Detailed new degree and diploma regulations were approved this week by the Council for National Academic Awards despite opposition from some council members.

A final editing of the regulations will now take place though no substantial changes will be made. They will come into force in September next year.

Members of the DipHE group opposed the regulations on the grounds that they were too detailed and would extend the council's authority over colleges and polytechnics. The council had before it proposals for substantial amendments.

Dr Edwin Kerr, the council's chief officer, said the introduction to the regulations reflected the philosophy of liberality which the council had traditionally shown. "It is not the case that we are introducing more formal regulations. The council has always had formal regulations."

The CNAA has a working party looking at the question of self-validation for colleges and some council members have seen the new regulations as a threat to this.

Dr Kerr said: "I have never myself seen a conjunction between the regulations and self-validation. The working party on partnership in validation is looking at how validation should be carried out.

NUS to fight new threat to benefits

by John O'Leary

A proposal to exclude students completely from social security payments has caught the National Union of Students by surprise. A major row is expected.

The proposal is included in a review of the supplementary benefits system although a similar plan was shelved last year.

Students are already unable to claim during the two short vacations because, since 1976-77 grants for advanced further education courses have included an element to cover these periods. But the regulations do allow benefit to be paid during the summer if a student cannot find temporary employment.

Angry protests greeted the previous proposal to prevent claims at any time and a similar reaction is certain when the report's recommendations regarding students become widely known. The National Union of Students has already announced its intention to oppose the plan strenuously.

The report, *Social Assistance*, was compiled by a team of officials in the Department of Health and Social Security and will be the subject of wide-ranging consultation before any changes are implemented. An introduction signed by Mr Ennals, Secretary of State for Social Services, emphasizes that the Government is not committed to the views expressed in the review.

Nevertheless, an NUS spokesman expressed surprise that proposals to exclude students had been resurrected. "We thought we had convinced Government that unless there was an adequate system of grants to cover the summer vacation it would be necessary for students to claim, particularly now that there are few opportunities for vacation employment," he said.

The review supports the a grants system which co entire year, pointing out Supplementary Benefits C sion has criticized the arrangements which rely separate systems. But it recom that until such a change instituted the position sho clarified by extending the exclusion from benefit to on advanced further edu courses. Those on non-adv courses are already excluded.

School-leavers would also be vented from claiming benefit after the end of the holidays if the report mented. This is intended to those who have the firm of a job or a return to education from artificially unemployment figures. NUS oppose this recommendation, because of the hardship the believes would result.

Mary Tamm, who will be Timelady Romana

Who's Who in Tardis set?

Stand up and be exterminated all you misguided souls who thought Doctor Who was just a children's television programme or an escapist dream for the mentally infirm. For, miserable Earthlings, the good Timelord must now be seen as a vital, moralistic figure of our day—and to prove it, several hundred devotees will be gathering at Imperial College, London, next month to pay homage.

The members of the Doctor Who Appreciation Society will assemble on August 12 and 13 for their annual convention, a veritable beanfeast of old films, lectures and displays. The Doctor's electronic dog, K9, will be on view; the odd Dalek will appear of course; and there will even be two Doctors—in the shapes of actors Jon Pertwee and Tom Baker.

Sadly, the more attractive shape of former Doctor's assistant Leela (actress Louise Jamieson) will not be present but her replacement, Timelady Romana (Mary Tamm) will no doubt compensate.

And the discussions will ce centre on issues of vital impo to future galactic peace. How the Doctor's timeship, the Ta Why haven't the Daleks any of the recent televisio And which of the four act played the man was the be fate of the universe i balance.

Not that DWAS membe themselves too seriously have got to be able yourselves in a society said convention organi Barnfather. But he insisted Doctor represented an moralistic figure with versal insistence on and his belief in indivi dom.

This view will no doubt by the expected 400 visitors convention, including seve are flying over from the States to attend. And that account of only this dimensi

Government shelves decision on overseas students

No decision will be made on the establishment of a standing commission on overseas students until the Government has carried out its overall policy review. Hopes of an announcement during this Parliament disappeared in a debate in the House of Lords.

Baroness Llewelyn-Davies, speaking for the Government, said there would be no sudden announcement of new policies because full consultations with all the interested parties would precede any final decisions. This process would begin very soon and would cover the proposal for a commission.

The statement disappointed supporters of a commission, who now fear that the decision will be overtaken by a general election. Lord Gladwyn, chairman of the United Kingdom Council for Overseas Student Affairs, which made the original proposal, said there appeared to have been no progress and supported the call from Lord Belstead, a Conservative spokesman, for overseas students to be made the responsibility of the Ministry for Overseas Development.

Such a transfer is one option being considered by the Conservative Party, which is carrying out a parallel review of policy. It is expected that the review will favour a commission.

A decision on increasing overseas students' fees—one of the matters which a commission would consider—is now likely to be made before the Government review is completed.

Setback to hopes of setting u British science centre

by Robin McKie
Science Correspondent

Plans to set up a major British science centre have suffered a considerable setback as negotiations to buy a home for the proposed UK Science Foundation in London's Kensington area look like collapsing.

Dr E. G. West, vice chairman of the foundation's steering committee, said they had only discovered last month that the vendors, an order of the Catholic church, had agreed to exchange contracts with another party. Up till then, the committee had assumed the sale of the property, an 80-year-old complex which includes a convent, seminary and school, was to have gone to the foundation.

The buildings, which would have served as a headquarters for many smaller scientific societies and as a much-needed meeting place for the different branches of science and technology, would have been occupied without major alteration.

Now the problem-plagued foundation appears to be facing homelessness again. "The problem is worrying us", said Dr West. had hoped to get into the by Christmas, although we to adopt some sort of sho measure to get us by for a

However, the deal with the party is not believed to have finally completed and the committee members retain a hope that the property may be sold to the foundation.

The original plans for the were delayed for a conside period last year when Kensi and Chelsea Council refused to planning permission for the plex. But last year Mr Peter S the Environment Secretary ruled the council following a inquiry and permitted the sion of the six-storey block.

The centre would not a commercial intrusion into a desirable residential area, he and the members of the society would not disturb the peace of district. It was believed this sion would clear the way for site's owners, the Convent of Lady of Sion, to sell to the Fo tion.

Laser beam go-ahead

The Government has given the go-ahead for a £750,000 laser development at the Science Research Council's Rutherford laboratory.

The money will be used to construct four new laser beam machines at the laboratory's present two-beam facility which was built in 1975.

Dr Paul Williams, deputy head of the laboratory's laser division, said the new development would be one of the most powerful lasers outside the United States and would enable researchers to improve their work on dense, high-temperature plasmas.

NEXT WEEK

The American way of philo
Bureaucracy and research
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Thirty years of the C
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Soviet delegates make friends with their Cuban hosts at the exhibition of the Cuban youth league at the World Youth Festival in Havana

Universities push for 'insider' pressure on South Africa

by John O'Leary

A new approach to South African investments, by retaining shares and exerting internal pressure on selected companies, has won provisional support from more than a dozen British universities. The initiative came from Aberdeen University, which advocated pooling of information and adopting a coordinated policy of investment.

Although response to the proposal for joint action by the universities was described as "not particularly encouraging", Aberdeen intends to persevere with the scheme. Some 35 universities replied to a circular letter sent out in February, but only 12 said they would support such a plan.

The full details of Aberdeen's intentions and the reaction to the initial proposals will be published in a report later this month. A committee set up by the university court with representatives of the campus trade unions and the students' union has sought the views of a wide variety of organizations and individuals.

Its major recommendation, now approved by the court, is that joint action should be taken to collect and collate information on companies with a view to shareholder action where appropriate. Any register would concentrate initially on conditions in South Africa, although it is anticipated that there might be a desire to widen its terms of reference to cover other countries.

This was preferred to a policy of withdrawing investment in companies with South African connexions, as a number of universities have done. The University of Wales was the last to do this, and its decision was announced last week.

Although the Aberdeen committee was formed in response to student pressure to withdraw investment, it was decided that coordinated pressure on companies from shareholders was more positive. The university did sell its shares in three companies which appeared on a "blacklist" issued by the National Union of Students and the Anti-Apartheid Movement.

The Aberdeen plan was discussed at a recent conference organized by NUS and Anti-Apartheid, but it was decided to continue with the disinvestment campaign, which has been running for several years. NUS now lists eight universities or Oxbridge colleges which have been persuaded to sell shares in companies with South African connexions. Others are said to be in the process of disinvesting or, as Aberdeen has done, have sold some shares.

Only a small number of those replying to Aberdeen's letter said they consciously avoided such investments and half said they definitely would not join in future action. Letters will be sent to those who favoured the scheme in about a month's time in order that the new system can begin to be organized.

Teesside given two-year deadline by CNAA

Teesside polytechnic has been told by the Council for National Academic Awards that it will lose approval for its degree courses unless there are big improvements in its management within two years.

In a highly critical report the council has also warned the polytechnic that it doubts whether academic standards can be maintained without better resources.

The report, which has been sent to the polytechnic and the local authority, was approved by the council at its meeting last week. It was produced after a CNAA team made its quinquennial visit in May.

If it fails to puts its house in order the council will refuse to validate degree courses there. The CNAA validates all the polytechnic's degree courses, though there are also courses validated by professional bodies and the Business and Technician Education Councils.

The report expresses reservations about the decision-making processes being used, especially the academic boards.

The visiting team was also critical of the lack of forward planning by the polytechnic's directorate. The report says that the council fears that academic standards will decline unless more attention is paid to the management problems which it highlights.

The polytechnic had already been told that the report was likely to

continued on back page

County council switch throws Oakes into the melting pot

by Judith Judd

Government plans for the future of higher education have been thrown into doubt after an about-turn by the county councils in a bout of pre-election manoeuvring.

The decision by the executive committee of the Association of County Councils last week to refer back to its education committee a report recommending acceptance of the Oakes committee proposals for the management of higher education is being widely viewed as political.

If the move was not inspired by the Conservative Party it is at least a reflection of the Conservative-controlled association's desire to create trouble for the Government which might claim the Oakes report as a modest educational achievement.

No grounds for the reference back of the report were advanced at the executive committee meeting and no alternatives were suggested despite an appeal from the chairman. The main fear of representatives was that the national body proposed by Oakes would pose a threat to the autonomy of local authorities.

This is in conflict with the view taken by Conservatives in Parliament. Dr Keith Hampson, MP for Ripon, a junior education spokesman, has called for an end to local authority control of colleges outside universities.

The ACC originally accepted Oakes largely because it feared that the alternative scheme of inter-authority recoupment payments favoured by its partners in the metropolitan councils was likely to result in a net loss of money to the shire counties.

The Association of Metropolitan Authorities, which came under Conservative control in the spring, has also referred back the question of Oakes to its education committee. Only two weeks ago the Council of Local Education Authorities supported the Oakes proposals.

Whether civil servants will continue with their plans to include the Oakes proposals in an autumn education Bill in view of the local authorities' opposition is uncertain.

The ACC's education committee does not meet again until September and any change of policy would almost certainly have to be endorsed by an executive meeting on November 1.

Last week the ACC executive also changed its policy over educational maintenance allowances for 16 to 19-year-olds. Mrs Williams, Secretary of State for Education, has proposed a scheme of mandatory awards to encourage children to stay on at school beyond the age of 16.

The executive passed a motion

continued on back page

British accuse Soviets of interference

from Peter David

HAVANA

The Eleventh World Youth Festival ends in Cuba tomorrow amid an atmosphere of charge and counter-charge following the distribution of a leaflet by the British delegation condemning the recent dissident trials in the Soviet Union.

At a meeting in the middle of the week Mr Valery Filipov, vice-president of the Soviet Committee of Youth Organizations, said the British action had been out of keeping with the traditions of the youth festival. He claimed the leaflet contained errors of fact and its content should have been discussed with the Soviet delegation before being issued.

But Mr Trevor Phillips, president of the National Union of Students and delegation leader, in turn accused the Soviet youth leaders of exploiting divisions within the English delegation and encouraging sympathetic members of the British Young Communist League to dissociate themselves from the official British stance.

"We made it clear to the Soviet leaders that they could not dictate the terms of discussion at the festival. Like every other delegation we consider ourselves at liberty to raise any matter in its proper context. We refuse to be bullied by anyone, Soviets or otherwise", he said.

The distribution of the British statement to the 20,000 delegates means that the British delegation has fulfilled its pledge before departing for Cuba to raise the issue of human rights in the Soviet Union despite the traditionally predominant position of the Russians in earlier festivals.

In May the Federation of Conservative Students refused to take part in the festival on the grounds that the Soviet stranglehold would make serious criticisms of communist regimes impossible. In the event the only real problem turned out to be a large group within the British ranks opposed to overt criticism of the Soviet trials.

The critical moment for the delegation came when members voted by 64 votes to 60 in favour of issuing a much-amended leaflet inserting references to human rights infringements in Britain and the United States, and softening the line on the Soviet trials.

Even this failed to satisfy some delegates, however, who proceeded to issue a counter-leaflet claiming that the official leaflet did not represent the views of youth and students in Britain. It accused the delegation leadership of ignoring the views of its members.

Commenting on the counter-leaflet, Mr Phillips said that most signatories appeared to be members of the Young Communist League. "The leaflet was not signed by any of the representative organizations in the delegation, but by a group of individuals.

"This group has invented a pack of lies aimed at deflecting us from the objective we set ourselves when we came to Havana", he said.

Earlier not all the rum in Cuba seemed to have quenched the appetite of British youth and student leaders for earnest dispute about issues of supreme unimportance. Byzantine arguments left the British contribution to the opening ceremony in disarray.

The British camp was greatly exercised by the problem of the

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Family vital in shaping young musicians

by Sandra Hempel

If a child has not started to learn a musical instrument by the age of 11, he will probably not go on to study music. This is one of the findings of a survey of music students at Exeter University, published by Exeter University Teaching Services.

The students were asked about a wide range of facts and opinions, including their backgrounds, their reasons for choosing music and Exeter, their views of the course, and how they used their time.

Thirty-one students took part in the survey, which was in three parts. There was a structured interview, a questionnaire and a diary in which students were required to record how they spent their time at 15 minute intervals during the week before the survey.

Most students began learning an instrument at the age of eight, and, although men began their first instrument earlier than women, women began their second instrument earlier than men.

Students first became interested in music through performing rather than through academic study, and family influence was very strong in their decision to take music.

When asked who of their immediate family or friends played an instrument or sung, only two students mentioned friends. Parents, however, were mentioned by 54 per cent of students taking music as a single subject, 70 per cent of those taking it as a combined subject and 75 per cent of those taking it as an additional subject. Two-thirds of the students had a brother or sister who played.

Questioned about the major musical influences in their lives, six students mentioned their first instrumental teacher, four mentioned a specialist environment and six mentioned school teachers. "It is interesting", says the report, "that a good proportion of those influenced by their school teachers specifically mentioned teachers in their junior school".

When asked why they chose music, all but four of the 31 said they liked it or were interested in it. Eleven said they were good at it and four said they had a good teacher.

Just under half the students said they had a definite career in mind and the extent of interest in teaching was higher than that in any other department of the university. The survey found no reason to suggest that students chose university as a second choice to a college of music. Some wanted the broader horizons offered by a university and this was sometimes related to career prospects.

The boundaries between work and leisure were not distinct for music students and the completed diaries showed 12 main types of entry. Combined honours students spent an equal amount of private study time on music and their other subjects, while those taking general honours or additional music estimated that 20 per cent to 30 per cent of their academic time was spent on music.

Studying Music at Exeter, Exeter University Teaching Services, Devon.

Someone, somewhere may be helped by Exeter service

by Patricia Santinelli

Exeter University Teaching Services have to provide an immediate up to date information telephone service on existing and new teaching/learning methods when it forms the National Information Centre for Higher Education next month.

Its main role will be not only to provide academics and other inquirers in the United Kingdom and the rest of the world with information and literature but to put them in direct contact with experts or practitioners of various methods.

The services have been given a two-year £18,000 phased grant from the Council of Educational Technology to build up a database from which information can be retrieved according to interest, departments or institutions.

Mr Donald Bligh, director of the Teaching Services, said: "This will enable us to answer inquirers on, for example, the Keller Plan by referring them to say an academic at Surrey University, or tell them who at Aberdeen University is carrying out a project in microbiology."

The Teaching Services have already developed a computer based information service, TEARS, designed to help teachers and educational researchers locate references of interest to their work.

Questionnaires are to be circulated to all institutions and departments asking for personal details, addresses and telephone numbers, together with individuals' particular interests as well as what activities or innovations they have carried out in the past or more recently. The information will then be catalogued in card form and added to the existing database.

A pilot project to check out the operation of the system is to be held at Liverpool University and an as yet unnamed polytechnic. Both institutions will have a link man whose responsibility will be to see that questionnaires are distributed to all departments.

"Basically it is a very exciting project which will bring the wealth of knowledge in higher education together", Mr Bligh said. "What we are particularly interested in are innovations which have not yet been published and I suspect that there are many of these."

SPECIAL ANNOUNCEMENTS

In the academic year 1978/9, the Commission of the European Communities in Brussels will be providing:

EEC GRANTS

FOR THE DEVELOPMENT OF
JOINT PROGRAMMES OF STUDY

between institutions of tertiary education in two or more EEC Member States.

Closing date for applications is 15 September, 1978.

Further details are available from Mr. A. Smith at the Institute of Education of the European Cultural Foundation, which is responsible for the management of the scheme. Address:

Institut d'Education de la
Fondation européenne de la Culture
Université Paris IX-Dauphine
1, Pl. du Ml. de Lattre de Tassigny
75116 PARIS
Tel. Paris 727.06.41

The new home for the British Library of Political and Economics Science was renamed the Lionel Robbins building after Lord Robbins, who has been the chairman of the library appeal which has made the new development possible. Lord Robbins, left, unveiled the plaque. With him are Sir Huw Wheldon, chairman of the court of governors, and Professor Ralf Dahrendorf, director of the London School of Economics.

The OU and the pendulum at St Paul's

St Paul's Cathedral is to be used to demonstrate that the earth rotates. The cathedral's chapter has agreed to stage a re-construction of the Foucault experiment as part of a television programme for the Open University science foundation course.

A 268 ft pendulum will be hung from the top of the cathedral dome with a 150lb brass ball on the end of it and it will then be allowed to swing 30 ft across the floor.

The pendulum, swinging on a fixed pivot, makes a mark on the ground beneath it and over 33 hours these marks form a circle as the earth rotates 360 degrees.

Professor Michael Pentz, dean of the Open University's Science Faculty, said that the experiment was part of the first television programme of the new science foundation course which will be presented to 5,000 students a year from 1979.

It is thought to be the largest reconstruction ever in Britain of Leon Foucault's famous demonstration which was first set up in the Pantheon in Paris in 1851.

Southampton warns of space shortage in the 1980s

by Judith Judd

Universities are desperately short of space and will be unable to meet student demand unless Government policies change. This is the message in Southampton University's response to the Government discussion document *Higher Education into the 1990s*.

The submission says that the University Grants Committee has said that the cost of the buildings which the universities have said are crucial is far beyond anything that is likely to be provided. "If this policy is maintained there is no hope of the universities being able to meet the demand on them in the ten years ahead."

Southampton says that it has been asked to expand from 6,030 full-time equivalent students to 6,332 by 1981-82. "At present, based on UGC norms and including temporary and obsolescent buildings, (portakabins, terrace and semi-detached houses and even World War I army huts), we have just sufficient teaching accommodation for this number.

"But that accommodation does not match the balance between arts and science. And if temporary and obsolescent buildings are excluded we have sufficient for only 5,700."

According to UGC nor university needs more libra has catering facilities f 5,400 students and sports f for only 3,332. "In these stances to suggest that the bulge might be accommod 'tunnelling through' or so lar expedient is totally unre

The university suggests th reduction in the intense com for places in higher educatio be desirable. It is this tha cause of too early specializ sixth forms which "will eradicated so long as pupils that they cannot hope to place to read for their cho gree courses unless they exceptionally high grades vital subjects in the examinations".

The proposals to change the level system to one in took three N and two F make matters worse by ing concentration on two

The problem will only be by greater slack in higher tion, says the university. It that refusal to expand is more likely to mean that buil will prove inadequate in both long as well as the short term

Annan salary protest veto

Sir Douglas Henley, the Comptroller and Auditor-General, has refused to intervene in the controversy over the appointment of Lord Annan as vice-chancellor of London University at a salary of £26,000.

Sir Douglas has replied to a letter from Professor John Griffith, professor of public law at the London School of Economics.

Professor Griffith said that Lord Annan's salary was a misuse of public funds since there was not a full-time job for London's vice-chancellor to do. Lord Annan is the first vice-chancellor to occupy the post full-time.

Professor Griffith said that the vice-chancellor took none of the important decisions and was supported by the principal, a full-time highly-paid official.

In his reply Sir Douglas says: "I observe from the preamble to the senate resolution that the Privy Council have confirmed that there is no legal bar under the existing statutes of the university to the payment to the vice-chancellor of a salary or honorarium determined by the senate to be appropriate to the responsibilities and load of work.

"I have considered carefully the point you make and the earlier discussions bearing on the vice-chancellor's appointment; but I do not think my responsibilities require me to express an opinion upon the considered judgment of the governing body of a university acting properly within its legal powers, in relation to the salary appropriate to the holder of a particular post."

Professor Griffith said this week that he would not abandon his campaign and would try to have the matter raised in the House of Commons.

Aston buys college site

The premises of St Peter's C Birmingham, which closed month, are to reopen in Sep as part of Aston University sale of the freehold has been and approved by the Church missioners and the Departm Education and Science.

Aston has rented student modation from the college past two years and immedi will be made of the 250 b available on the campus. Ea also been laid to integrat and conference facilities on t mainder of the extensive si

The university is to co with the Inner City Partnership the intention of using some of teaching accommodation for t development of advanced cour technological education and t ing. The scheme would use Gov ment money to establish adult cation courses.

Other teaching facilities, which clude engineering workshops a library, are earmarked for spe ized educational services. One development under considerat an advanced engineering de centre, which would concentrat product development and the ap cation of micro processors in co engineering.

Conference activities will greatly expanded through university's acquisition of the lege premises. A communal will include a gymnasium, ca ing and sports facilities and common room for use both students and conference delegat

St Peter's was listed for clos in 1975 and had been the subj of debate in church educa circles even before that. A le campaign to keep the college because of its work in the dep area of Saltley proved unsucc

Kent to validate college's courses

by John O'leary

All degree courses at Christ Church College, Canterbury, are to be validated by Kent University from next year. The college has now received the approval it needed from the Department of Education and Science for the last part of the switch from London University.

Courses leading to a BA or BSc had already been transferred following the agreement of the council of Kent University at the end of last year, but the college had to wait for formal approval from the DES before altering arrangements for its BEd degrees.

Students already studying at the college will continue to receive London degrees but all new entrants will be subject to the new arrangements. Christ Church has been associated with London University since its foundation in 1962 but increasing cooperation with its near neighbour has made the switch an obvious development for several years.

The college will now be able to appoint a number of members to the university senate and council, while the process will be reversed for the governing body and academic board of Christ Church. It is hoped that cooperative teaching ventures which already take place on a small scale will increa under the new association.

There had been fears that DES approval for the BEd switch mig be delayed until next year a intending students have be warned that the validating bo could be subject to a late cha Mr Tom Hetherington, the se tutor, said he hoped the late no cation would not affect recruitm for the coming session.

Although it is hoped in tim offer joint courses between two institutions in subjects w neither could support alone, t is no question of a merger. college, which is the responsi of the Church of England thro its Board of Education, is to re independent and has been allo 500 teacher training places for

Coleg Cymraeg reality closer

by Tony Heath

Moves to establish a Coleg Cymraeg—an institution of higher and further education with courses taught through the medium of the Welsh language—are expected to be initiated shortly.

The setting up of such an establishment has been the subject of contentious discussion for many years, especially since 1973 when the University of Wales inaugurated a broadly representative working party to consider the matter. The working party's recommendations recently received the support of the university's court, which has endorsed the crucial proposal that Welsh-medium non-university higher education should be provided by a new public sector institution—the Coleg Cymraeg.

At the same time it is proposed to set up a board to coordinate and develop courses taught in Welsh within the university, mainly at Aberystwyth and Bangor. These cater for the 2,000 or so Welsh speakers among the university's 20,000 students.

By developing a wider spread of degree courses embracing disciplines other than those with clear Welsh connexions it is hoped to retain Welsh speaking school leavers who might otherwise seek places in universities outside the Principality.

The working party opposes setting up a separate Welsh-only college within the university's federal structure, largely on the grounds that it would not be large enough to offer a comprehensive range of courses.

However the growth of Welsh-medium schools points unmistakably to the need to provide adequate opportunities in the wider post-school sector. The working party recognizes this with its proposal for a Coleg Cymraeg offering higher education through Welsh, including professionally and vocationally oriented degree courses validated by the university.

Local authorities are now to be invited to cooperate in examining the proposal and to consider how it can be implemented.

Although the working party makes no suggestions as to a possible location for the new college the claims of the predominantly Welsh-speaking north and west are obviously strong.

Concern about the health of the language spoken by about one in five in Wales is today greater than at almost any time this century. The thrust for Welsh medium education, now especially visible in nursery and primary schools, is working its way upwards. The working party's proposals seem to acknowledge the need for higher education to plan promptly in order to catch the tide.

Some of the thousands of letters received by the National Union of Students in response to its campaign on covenants are examined by Miss Penny Cooper, NUS Treasurer (centre) and welfare staff. The union is encouraging parents to avoid paying up to £335 a year in tax by paying contributions to student grants in the form of a covenant.

Future of language study 'lies in combination courses'

by Judith Judd

The future of language studies lies in combinations with other subjects and not in single honours courses, according to a report from two academics at Surrey University.

Professor Nigel Reeves, Professor of German, and Mrs G. M. Anderman, senior lecturer in charge of Swedish, see this as the salvation of the less common languages in the face of the steadily falling number of university entrants with an A level language.

In a paper "Scandinavian Studies in the UK Present and Future", they point out that by October last year the percentage of undergraduates on combined courses had grown to 70.

The paper also says that in Scandinavian Studies "postgraduate figures are frighteningly small. They show that Scandinavian research among the youngest generation of academics is on the point of extinction".

In 1977 there were only three full-time postgraduates enrolled for a Swedish research topic, one each for Norwegian and Icelandic and none for Danish.

The paper suggests that courses should be redesigned with an emphasis on the analysis of Scandinavian social, political, economic and industrial structures.

It also advocates cooperation between language departments and with departments of English, social science and business studies.

The paper was prompted by the deliberations of the first working party of the national congress on languages in education and contributes to the controversy reported in April 1977, on the organization of Scandinavian studies in universities.

It strongly opposes the suggestion put forward in a report by seven academics that Scandinavian studies should be concentrated in those universities which had shown the "greatest resourcefulness and vitality".

It says that the arguments in favour of Scandinavian studies as subsidiary and optional courses with language, social science or business studies degrees do not support the concentration of staff in a few large centres.

"On the contrary, present student demand indicates that the effect of concentration would be to reduce still further the numbers of undergraduates.

"Many will opt for Scandinavian studies within another course but would not have applied to a university because it offers Scandinavian studies." Enlarged units would not be cost-effective.

It pays to study in London

Postgraduate grants for London students are to rise by more than 20 per cent in the coming year, but those living away from home in the provinces will have to make do with less than half this increase.

Awards for 1978-79, announced in the House of Commons by Mrs Williams, Secretary of State for Education, were said to be in line with undergraduate grants, which were announced in April. The overall increase for both categories is 9.8 per cent.

However, while postgraduate students living away from home in London receive a rise of £335, bringing their total to £1,990, those in a similar position outside the capital are given an increase of less than 10 per cent, from £1,475 to £1,610. Home-based students' grants go up from £1,075 to £1,210.

Mr Trevor Phillips, president of the National Union of Students, welcomed the London rates but regretted that similar increases had not been forthcoming for other students.

"The whole business of defining rates of grant for postgraduates is becoming more and more irrelevant, as an increasing proportion of them are having to finance themselves", said Mr Phillips. "The Government, together with the research councils, really ought to be working out a system which enables everybody studying for a postgraduate qualification to be adequately financed."

Academic film-makers hail fourth channel

by Patricia Santinelli

The proposed fourth television channel is likely to offer universities, polytechnics and other educational institutions their greatest opportunity for showing their material nationally at peak viewing times. This is the reaction of both the Educational Television Association and the British Universities Film Council to the White Paper on broadcasting issued last week.

The Government has rejected, as did the Annan Committee on broadcasting, an Educational Broadcasting Authority. Instead it proposes a fourth channel under an Open Broadcasting Authority which would give substantial peak periods air-time to education, including the Open University, as well as minority interest programmes. Responsibility for coordinating the major part of educational broadcasting would remain in the hands of the BBC and the Independent Broadcasting Authority.

The fourth channel is to be engineered and transmitted by the IBA at a cost of £27m spread over nine years to cover 99 per cent of the United Kingdom population. Particular stress will be put on making the fourth channel operational in Wales by 1981 in line with the recommendations to increase Welsh language coverage to 75 per cent.

The OBA's role will be to act as a publisher, commissioning, purchasing and acquiring programmes which are of "interest and worthwhile" but do not compete with programmes on existing channels. Its responsibility for the service will be on similar lines to those appertaining to the BBC and IBA, but because of its particular aims it will not be under obligation to provide a "proper balance" of programmes. Appointments to the new authority are to include a fair proportion of experienced educational broadcasters.

Financing has been left vague. The report indicates that although the Government will provide financial assistance in the early years of the authority and throughout for educational programmes, it expects the OBA to finance itself eventually by seeking advertising revenue either in the form of sponsorship, or spot and block advertising.

The White Paper stresses that at the beginning the channel will have to rely on independent television companies for a significant part of its output because of the need for long-term planning. It indicates that consultation between the OBA and IBA will therefore be necessary to avoid adversely affecting financing and programming of the latter. It suggests that there may be a case for complementary scheduling between the two channels.

However, reliance on independent television companies may not be as vital as the Government believes. Dr Robin Moss, honorary secretary of the Educational Television Association, whose membership covers 200 educational institutions and individuals, says that materials already exist which are suitable for showing to a regional or national audience.

"I think there is a very good chance that institutions with closed circuit television may be able to play a part in the sort of provision that the Government has in mind, especially as many of the larger units have now converted or are going over to colour", Dr Moss said.

The Open University welcomed proposals that it should be given more air time, the ideal solution to its expanding course programmes. A spokesman said: "Television was squeezed dramatically last year, reduction in repeat programmes going from eight last year to 32 in the current period".

Mr Geoffrey Hubbard, director of the Council for Educational Technology thought there was great scope for universities getting together to produce programmes for the fourth channel. He saw this as an invaluable escape from the OBA's total dependence on independent television companies.

But he predicted conflict arising from the vague financial proposals. If long-term funding was to be given to educational broadcasting on the fourth channel how could requests for similar funding from the two existing authorities be discarded?

"However, there is a real possibility of something different emerging from the new authority", he said. "It may choose for example to adopt the Canadian model and hold an auction where educational broadcasters present programmes to users, and only those that receive general acceptance are selected."

Union blacks BEC courses in Surrey this year

There is now no hope that a dispute between the National Association of Teachers in Further and Higher Education and Surrey County Council will be resolved in time to allow Business Education Council courses to begin this September at four Surrey colleges.

NATFHE had instructed 60 lecturers involved in preparing BEC courses at Brooklands, North East Surrey, Guildford and Redhill colleges to black any start until 1979, following a refusal by the authority to grant extra resources.

Representatives of both sides have now met and clarified their positions but a definite conclusion is hampered by the colleges' closure over the summer holidays. NATFHE representatives will not be able to report to their national executive until September 1.

A NATFHE deputation is to meet Oxfordshire County Council in September to discuss similar problems involving six colleges and there is little likelihood that any BEC courses will begin there until 1979.

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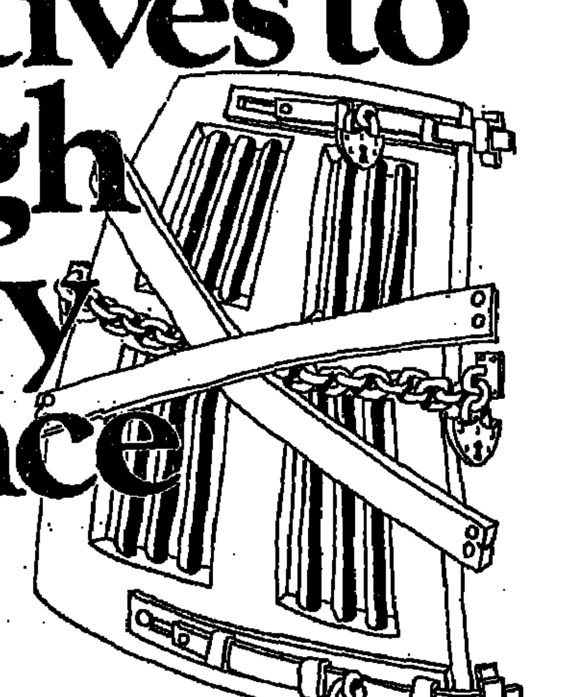

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Edinburgh agrees OU credit transfer scheme

The Open University has reached agreement with the arts faculty at Edinburgh University on the acceptability of OU course credits for entry to courses.

Edinburgh thus becomes the third Scottish University to have a link with the OU. It does not have the status of a formal agreement, unlike the links with St Andrews and Heriot-Watt, since the whole of the university is not involved.

The faculty is to consider applicants for entry to the second year who have one OU foundation course and one post-foundation course credit, and applicants for third-year entry who hold at least four credits.

The Heriot-Watt agreement was made public last week by the Chancellor, Lord Thomson of Monifieth, at a graduation ceremony.

These links come at a time when, as the graduation speeches of most principals have shown, there is keen awareness in the universities of the need to keep their heads above the financial waters by attracting extra students.

Lord Thomson described the "important partnership" with the Open University as part of the search for an overall strategy to attract mid-career entrants. In addition to easing entry for OU students Heriot-Watt students who for family or other reasons can no longer carry on studying full-time will be considered by the OU for transfer to its degree programme.

Both St Andrews and Heriot-Watt will regard success in OU study as the type of evidence to be considered instead of formal entry requirements for entry to first year. For admission to second year, the normal pattern will be a requirement for one foundation course and one post-foundation course credit, as with the Edinburgh Arts faculty link.

Since St Andrews and Heriot-Watt have a strict "two years in residence" regulation as a requirement for the award of their degree, admission as a graduating student to the third year of the ordinary degree or fourth year of the honours degree will not be possible for OU students, admission to the third year of a four-year honours course will.

● Principal James Drever, of Dundee University, went on in fine style last week in his final graduation address before retiring at the end of September. Attacking suggestions for liberalizing entry requirements he described a "politically conferred right" of university entry for all holding school leaving certificates as a "confidence trick in which the words university and education do not mean any longer what they used to mean".

Professor Drever said that when the state allowed unfettered right of entry to universities, the result was overcrowded classrooms, a high failure rate, and an imbalance between the output of the universities and the needs of the community.—*TESS*.

NALGO attacks Oakes plan

by Sandra Hempel

The proposed national controlling body for public sector higher education would not be properly accountable and would be inflexible in face of future demand.

This is the view of the National and Local Government Officers' Association in its response to the Oakes report on the management of higher education in the maintained sector.

It is also concerned that the Regional Advisory Councils would be without proper powers.

NALGO is particularly worried about the possible effect on its own members, the non-teaching staff. They would have no specific representation under the new system and those in small colleges could find themselves left to negotiate their own salaries, it claims.

"The report assumes that the pattern of demand for higher education will remain the same", NALGO says. "The Department of Education and Science, however, is currently carrying out consultations over its discussion document, *Higher Education into the 1990s* and NALGO is in favour of expanding higher education to attract a wider range of students.

"Any change in the pattern of demand will obviously affect capital and current spending decisions . . . and it is considered that the failure to take account of consultations over *Higher Education into the 1990s* is a fundamental flaw in the assumptions of the working group", the response says.

"NALGO considers that it is doubtful whether the proposed structure would either be flexible enough to respond effectively to changes in demand or capable of promoting a widening of demand".

On the proposed two-tier system of higher education, with only the larger institutions being transferred to national control, the union says that non-teaching staffs are employed on National Joint Council scales and actual grades are determined by local authorities.

"Any institutions transferred to national management must retain NJC scales for non-teaching staffs to preserve equity and some system of control over the grading of staff would have to be established."

On the subject of finance, NALGO says the plan to make the national body responsible for rationalising higher education expenditure with local authorities making direct contributions would result either in a net loss to other parts of the education service or to other services generally. Direct local authority contributions must be reimbursed through the rate support grant. On the subject of finance, NALGO says it "deplores the negative approach of the report which makes no suggestion that the national body would actively promote the development of the provision of higher education".

Although NALGO agrees with the committee that savings should be encouraged, it stresses that these must be genuine savings and not as a result of cut-backs in staff levels, career opportunities, grading structures, training or promotion.

It demands three "institutional" seats on the national body as of right, to remedy the lack of specific representation of non-teaching staff.

In addition there should be no outside interference in the negotiations of salary scales for non-teaching staff.

Women—all you need to know

by Patricia Santinelli

A new international retrieval service offered by the City of London Polytechnic's Library and Learning Resources Service, will make available a mine of information on women from the sixteenth century to the present day.

The BiblioFem service incorporating both catalogues of the Fawcett Library and that of the Equal Opportunities Commission will provide academics and students with a monthly computer microfiche of existing and current acquisitions ranging from the arts to the universal suffrage movement. Around 2,500 items will be included each year.

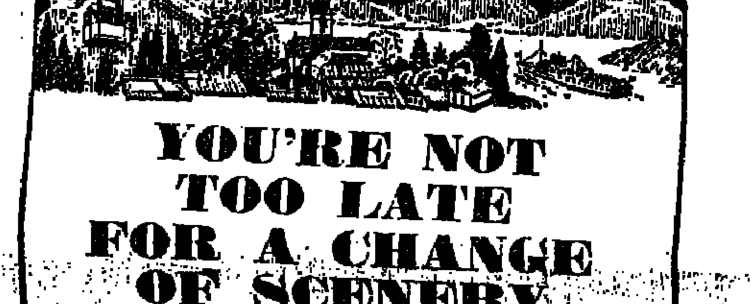
The Fawcett Library which was transferred to the polytechnic last year is acknowledged to be one of the finest collections of information and literature on women in the world. It consists of about 20,000 books and an equal number of pamphlets together with periodicals, archives, photographs, letters and press cuttings. The EOC's Library is concerned primarily with the current legal, social and economic position of women especially in the United Kingdom, North America and Europe.

Records from published books and pamphlets in English on women together with records for theses and research reports have been added to the catalogue. BiblioFem will thus provide control over the widely scattered information on women published commercially by national and international bodies and by women's liberation and other groups.

● How well are women being prepared to compete on equal terms in the labour market. This is one of the questions which a major survey of training initiatives for women in European Economic Community countries being undertaken by the Manpower Services Commission, hopes to answer by next year.

All nine EEC countries are participating in the survey which is being sponsored by the European Centre for Development of Vocational Training based in Berlin. The MSC's training services division is in charge of the project for the United Kingdom.

The investigation involves a systematic review of new initiatives in training and vocational guidance programmes which are aimed at achieving equal opportunities for women, in entering or re-entering employment, followed by in-depth studies of a limited number of those initiatives.



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Professor Derek Wood (left), dean of medicine at Leeds University, and Sir Peter Shepherd, chairman of Shepherd Construction Ltd, the main contractors, at the topping out of the university's new clinical sciences building at St James's Hospital last week.

Five-year plan to emphasize Third World issues

by John O'Leary

Extra government money is to be made available to provide a new emphasis on Third World issues in teacher education courses. Resources for initial and in-service courses are given a high priority in a five-year plan for development education announced by Mrs Hart, Minister for Overseas Development.

The new programme involves a major expansion of the Development Education Fund from its previous level of £150,000 to £2.8m by 1982-83. The immediate allocation of £500,000 is twice that recommended by the advisory committee, whose report was published simultaneously with Mrs Hart's announcement.

Mrs Hart is to meet Mrs Williams, Secretary of State for Education, to discuss the details of how the programme should be implemented within the formal education system. Other efforts to increase public awareness of the importance to Britain of conditions in Third World countries will be made through less orthodox channels.

The need for such a campaign was determined by a survey to be published shortly, which reveals that two-thirds of the nation holds parochial and introverted views and is unsympathetic to a world perspective. "Attitudes towards the underdeveloped countries in particular are confused by stereotype images, post colonial guilt, racial and cultural prejudices, limited, unbalanced knowledge, concern about future domestic employment, the belief that overseas development is synonymous only with aid and that aid is motivated only by charity", the report says.

The advisory committee was optimistic that attitudes could be modified through the provision of basic facts and Mrs Hart is anxious to "educate the educators" in this area. It is estimated that fewer than 3,000 adults attend courses in development studies each year and, even allowing for the proposed increases, Britain will still lag behind Sweden, Norway, Canada and The Netherlands in its support of this form of education.

Only six of the 45 universities have any plans to offer development studies and the subject is said to be absent from most adult education programmes.

The five-year plan allows for an expansion of current provision and preliminary work on the supply of more educational material before 1980. In addition, new in-service training courses will be devised to give teachers more confidence to tackle the subject in schools. Mrs Hart said she expected to consult the committee further on specialized topics and to engage consultants for this purpose.

Revamp of TOPS proposed

Proposals to redevelop the Training Opportunities Scheme in the light of the level of unemployment and shortage of workers in key skills are to be sent to the Government by the Manpower Services Commission.

This follows a thorough overhaul of the scheme which in recent months has been criticized as ineffective—an internal MSC report intimated that a high percentage of TOPS trainees were not obtaining jobs in the skills for which they had trained.

The proposals call for a considerable expansion of higher level training, particularly for technicians, as well as continued development of training for service occupations and for the semi-skilled level.

In addition the MSC suggests an experiment in the range of work preparation courses to help unemployed adults who need assessment, orientation, literacy or other help to prepare them for employment or further training.

'We are the British Brookings'

The Centre for Environmental Studies is operating as close to the ideal of a British Brookings as any single body in Britain. This is the controversial claim made by Christopher Foster, the centre's retiring director, in his annual report published this week.

The centre is now a research institute, an international centre, an originator of discussion and a meeting place for practitioners and scholars, he said.

Deploring "the gulf between action and thought", Mr Foster said: "It has never been harder to get through to the thinking politician. It was, therefore, easy to be contemptuous and indifferent and it was a cause of concern to the centre whatever the individual's political or personal prejudices might be."

Mr Chris Stoddard, research secretary, noted the shortening of research projects. Three-year projects still existed but those lasting one or two years were becoming increasingly common.

Three reasons were financial, the need to produce frequent reports and relevance. Researchers were well aware of the need to produce usable work, but if a week was a long time in politics, three years was an eternity.

There was, therefore, great pressure on researchers to produce instant results on the hot issues and it was important that the centre's work did not become fickle or "merely the clever recitation of received facts". To this end a small group had been formed to consider what medium-term research should be initiated.

The *Annual Report* is available from the Centre for Environmental Studies, 62 Chandos Place, London, WC2N 4HH.

60 new awards for Ugandans

Sixty new awards for Ugandan refugee students have been announced by Mrs Hart, Minister for Overseas Development. This will bring Government spending on its two Ugandan higher education programmes to £500,000 in a full year.

The new scheme will assist refugees in neighbouring African countries, where the majority are expected to continue their studies. Others will join 120 of their fellow countrymen on courses in Britain.

Training awards for Ugandan refugees already in Britain were introduced in September, 1977 and were allocated by the World University Service with advice from a panel of academics and ministry officials, chaired by Sir Geoffrey Wilson. Arrangements for the regional scheme will be the same.

Students will take subjects of relevance to economic or social development and will be able to take up places in the autumn. Mrs Hart said the new scheme, which will cost about £165,000 this year, was an important extension of the Government's provision for Ugandan refugees.

North American News

Age law will cut down recruitment

A new law raising the compulsory retirement age in the United States from 65 to 70 will have a significant adverse effect on the recruitment of young academics, according to a study by the American Association of University Professors.

However, the association's special committee on age discrimination and retirement, convened to study the impact on higher education of the Amended Age Discrimination in Employment Act, concluded that "the aggregate effect is scarcely so drastic as to constitute a serious challenge to academic tenure."

The committee, whose work was funded by the Ford Foundation and the Lilley Endowment, devised a "faculty flow model", showing the rate of recruitment and retirement for faculties with three different age structures: "young" (typical of many universities that grew rapidly in the late 1960s and early 1970s), "balanced" (close to the age distribution of American academics as a whole) and "old" (representative of many established institutions which grew only slowly and achieved some of that growth by hiring experienced academics from other universities).

The model made reasonable assumptions for the likely behaviour of faculty members. One key assumption was that three-quarters of those aged 60-64 would continue to 70 after 1982, when the new retirement age comes into effect for tenured academics.

(For most workers the retirement age is to be raised from 65 to 70 from January 1979. The delay for professors was a compromise between the Senate, which wanted to keep it at 65 for tenured academics, and the House of Representatives, which thought academics should be retired in the same way as everyone else.)

On the assumption that a university holds its total faculty size constant, the model shows a substantial adverse effect on hiring in the short-term. It is worst around 1987, when appointments of new staff are cut by about one third as a result of the higher retirement age, for all three age structures. The effect declines rather erratically from then on, with a 15 per cent reduction in new appointments to the "balanced" faculty in 1992 and a 5 per cent cut in 1997.

The model also showed that, because older professors expect higher pay, the salary bill of a university that held its faculty size constant is likely to rise by 3 to 5 per cent.

An alternative assumption—that a university holds its total salary bill constant—gives much more dire predictions. For all three types of faculty age structure, no new appointments could be made in 1987 and some academics would have to be laid off.

The effects would continue to be felt very severely for the rest of the century. New appointments to the "balanced" faculty would be cut by 86 per cent in 1992, 54 per cent in 1997 and 38 per cent in 2002 from the levels that would have been possible if the retirement age had stayed at 65.

However, the six professors on the AAUP committee seem not to have taken this prediction too seriously. For they say: "In our judgment, the financial and labour market implications of the amendment, while significant, are scarcely so devastating as to require the serious consideration of abandonment of academic tenure."

It should be noted that academic tenure is the great symbol of academic freedom for the AAUP.

The damage that retirement at 70 is likely to do to the fragile job market for young academics in the 1980s has led to renewed suggestions that tenure should be replaced by a more flexible staffing system, such as renewable contracts, that would give universities more scope for getting rid of inadequate staff and making room for new talent.

The committee does touch on the fact that there is a growing movement in the United States to abolish compulsory age-based retirement altogether. This, it concedes, would be a more significant threat to the tenure system.

The report does not itself contain recommendations for alleviating the impact of the Act, but it strongly urges individual colleges and universities to use the three-and-a-half years before it comes into effect to develop their own institutional responses.

More important than the change in the retirement, it says, "is the need for institutions to adapt to significant and continuing changes in their faculty age distributions.

The AAUP committee discovered that very little research has been done to assess the behaviour of people approaching retirement, and the factors that make them decide whether to retire early or work on to the end.

Marxist in freedom row

Marxist author, Professor Bertell Ollman, is at the centre of the latest controversy among academics over political beliefs. Clive Cookson reports from Washington

The new president of the University of Maryland has precipitated one of the United States' biggest academic freedom controversies in years by rejecting the nomination of Marxist Professor Bertell Ollman to chair the department of government and politics at the university's main College Park campus.

President John Toll claimed he decided against Dr Ollman, who is currently associate professor of political science at New York University, not because of his political beliefs but on purely academic grounds. He refused to say why Dr Ollman's academic qualifications were inadequate.

Dr Ollman's lawyers responded by filing a lawsuit against the university, alleging that he had been denied the appointment because of his Marxist political beliefs, in violation of his statutory and constitutional rights, that there was a conspiracy between Dr Toll, the *board of regents*, Dr Wilson Elkins *(the former* president who retired a month ago) and others to deprive him of the job for political reasons *and* that university officials broke the university's own rules and usurped the authority of the faculty. The American Association of University Professors (AAUP) is supporting him.

A departmental search committee recommended Dr Ollman for the chairman's job after considering more than 100 applicants. Their choice was endorsed by Murray Polakoff, provost for social sciences, and Robert Gluckstern, chancellor of the College Park campus, and Dr Ollman says Dr Polakoff offered him the job in mid-March.

The nomination was then forwarded to Dr Elkins, the outgoing president for his final approval, which would normally be a formality.

Unfortunately for Dr Ollman, news of his impending appointment reached local politicians before Dr Elkins acted. Several of them, including Maryland's acting governor, Blair Lee, expressed public doubts about the wisdom of selecting a Marxist for a key post at the state university. So did one or two members of the university's board of regents.

Governor Lee predicted that Dr Ollman's appointment might "kick up quite a backlash". Some state legislators (who fix the university budget) suggested there could be a financial price to pay.

"I don't think we ought to have in charge of a political science department of a major university an individual whose basic political beliefs are so opposed to the basic beliefs of this government", said a Republican state senator.

Dr Elkins decided only to avoid making a highly controversial decision right at the end of his 24 years as president, and he is said to have offered the regents the final say in Dr Ollman's appointment. But they thought it best to stay out of the matter, so Dr Toll found the explosive issue waiting for him when he took over on July 1.

He consulted academics extensively within and outside the University of Maryland, reviewed Dr Ollman's case—and came down against him.

Although Dr Toll would not say why Dr Ollman's academic credentials were not good enough, he did say that, whereas two thirds of the full and associate professors in the department of government and politics favoured the appointment, a majority of the most senior members of the department were opposed.

Bertell Ollman had no doubt at all that he was rejected for political reasons. "I am a victim of political repression, American-style", he said before leaving New York for a holiday. (He would have started at College Park next week if everything had gone smoothly.)

Dr Ollman, whose doctorate is from Oxford University, is best known for his book *Alienation: Marxist Conception of Man in Capitalist Society*, which is used extensively in university courses on both sides of the Atlantic. His reputation as a scholar and as a teacher at New York University is reputed to be excellent.

The American Association of University Professors has leapt into the dispute on his side. As soon as President Toll announced his rejection, AAUP associate general secretary, Jordan Kurland, sent Dr Toll a telegram urging him to spell out his reasons for the decision.

He reminded the president of the 1966 Statement on Government of Colleges and Universities, formulated jointly by the AAUP, American Council on Education (on behalf of university administrations) and association of governing boards (on behalf of trustees), which says presidents and regents should concur with faculty judgments on questions of academic appointments "except in rare instances and for compelling reasons which should be stated in detail".

Mr Kurland said that if Dr Toll did not produce acceptable academic reasons within a few days, an AAUP committee would probably investigate the prima facie evidence that the University of Maryland violated the accepted standards of academic freedom. This could lead to the university being censured by next year's AAUP convention.

In addition, AAUP legal staff are working with Dr Ollman's lawyers to force his appointment through court order. A Washington attorney acting for Dr Ollman said he hoped to expedite proceedings and get a judgment by October.

Economics professor Barbara Bergmann, president of the AAUP's College Park chapter, calls Dr Toll's action "a blow to academic freedom from which the university will have difficulty recovering".

In his announcement of Dr Ollman's rejection, Dr Toll gave the impression that, far from bowing to political pressure not to appoint Bertell Ollman, he had bravely resisted "considerable pressure for this proposed appointment from outside the university, mostly from people who have not carefully examined the qualifications of the candidate".

This interpretation was rejected by Professor Bergmann: "Dr Toll . . . cannot afford to acknowledge that he has given in to pressure from the Governor on down against the appointment, so his statement turns the affair completely around and boasts at length of not giving in to political pressure for the appointment. That is a ploy more worthy of John Mitchell (President Nixon's Attorney-General, jailed over Watergate) than John Toll", he said.

Chancellor Gluckstern and Provost Polakoff said they stood by their original opinions that Dr Ollman was the best applicant for the job, but they acknowledged the president's right to make the final decision.

Some of Dr Ollman's supporters in the politics department and among the students denounced their new president's "caving-in to political forces". But others approved of his decision and felt the department could find a better chairman.

The whole controversy must have put Dr Ollman under considerable personal strain, but there has been some consolation. Sales of Class Struggle, a new board game on Marxist principles, invented by Bertell Ollman, are booming—presumably partly because of the publicity about the Maryland dispute.

And he could make a fortune out of a $5 million libel suit that he has filed against syndicated newspaper columnists Rowland Evans and Robert Novak. He alleges they falsely presented him as admitting that the purpose of his teaching is to convert his students to socialism.

Clive Cookson,
North America Correspondent,
The Times Higher Education Supplement,
National Press Building,
Room 541,
Washington DC 20036.
Telephone: (202) 638 6765.

2.7 million 'wasted' degrees

A quarter of the people graduating from college over the next few years will be forced to take jobs for which a degree has not traditionally been needed, according to US government projections.

The *Occupational Outlook for College Graduates*, just published by the Bureau of Labour Statistics, says that over the period 1976-1985 10.4 million graduates will be competing for 7.7 million jobs for which a degree is normally required.

The remaining 2.7 million, the proportion whose degrees turned out to have been wasted—at least in terms of employment—was also around one quarter during the period 1969-1976, the bureau said. So things are not expected to get worse.

$2.8 million to help blacks learn about science

from our correspondent
WASHINGTON

In an effort to increase minority representation in science and engineering, the National Science Federation has chosen Atlanta University, a mainly black graduate and professional school, as a Resource Centre for Science and Engineering.

The university will get a $2.8m grant from the NSF to support the centre for the next four years. Twenty-five other institutions applied for the centre.

Atlanta University will cooperate with four other black undergraduate colleges—Clark, Morehouse, Morris Brown and Spelman colleges, which are its sister institutions in the Atlanta University Centre—to make its scientific resources available to a network of mainly black universities and colleges in the south-eastern states.

Dr James Rutherford, the NSF's assistant director for science education, says: "The concept represents a major new approach by the foundation, in which the combined resources of the academic and local communities and the region will be brought to bear upon the problem of under-representation of minorities and persons from low income families in science and engineering careers".

Activities at the centre will include short courses and improved access to research facilities for teachers at the region's black colleges, summer programmes for their students and teams of consultants visiting the colleges.

Primary school children from low income neighbourhoods surrounding the university will take part in a "Saturday Science Academy". The teachers and parents of these and other minority pupils in Atlanta will also benefit from other activities such as science career materials, workshops and special courses.

The resource centre also aims to improve science teaching programmes and research activities within the university, by appointing new faculty members and research associates.

Statistics show how much ground blacks still have to make up in science education. At the undergraduate level in 1974 they constituted 6.9 per cent of total college enrolment in the biological sciences, 4.6 per cent in the physical sciences and 5.9 per cent in engineering—compared to 10.7 per cent of the total undergraduate population and about 15 per cent of the whole 18-21 age group.

Things are far worse at postgraduate level. Black men made up 3.4 per cent of male PhDs in all fields in 1976, according to figures from the National Research Council (part of the National Academy of Sciences).

For black women the proportion was much better—6.8 per cent of all female PhDs. The corresponding figures for all minority races (black, hispanic, Asian and American Indian) are 5.6 per cent of all male and 9.2 per cent of all female doctorates.

Black children will benefit from the Saturday Science Academy.

In the sciences the position is truly dismal. The NRC data show that the total number of PhDs awarded to black men and women at American universities over the four years 1973-76 was only 23 in physics and astronomy (compared to 3,279 whites), seven in the earth sciences (1,800 whites), 52 in engineering (5,749 whites), and a slightly healthier 81 in chemistry (4,653 whites) and 224 in biological sciences (12,687 whites).

This shows that in many scientific fields, blacks were getting well under 1 per cent of all PhDs awarded. The situation has almost certainly improved a bit since 1976, the last year for which figures are available, but blacks still have far more ground to make up in the natural sciences and engineering than in medicine and the law—where minority under-representation has got more public attention.

Dr Frank Cummings of Atlanta University's chemistry department, who will be closely associated with the new resource centre, mentions three reasons why so few blacks go into the physical sciences. First, they are advised away from science and engineering by their teachers and counsellors at school, in much the same way as girls have been.

Second, they are handicapped by the poor quality of mathematics teaching in predominantly black elementary and secondary schools. And third, those blacks who do receive a Bachelor's degree in science go on to take a higher degree in education, with a view to a teaching career, at a far higher rate than whites.

Atlanta was apparently chosen from a final short-list of three. The other two institutions in the last round would have served chicanos and American Indians in the south-western states. The way blacks and hispanics and Indians were pitted against one another seems to have caused unnecessary bad feeling.

West Germany

Reform committee set up after representation row

by Günther Kloss

A permanent committee to take overall charge of course reforms in West Germany's higher education institutions has been set up at last after wrangling between the state governments and the universities about nominations for membership.

The Permanent Course Reform Committee, which has 22 members, is at the head of a committee structure set up under the Federal Framework Law for Institutions of Higher Education.

One of the Act's chief aims is to provide the incentive and mechanism for the hitherto neglected reform of the content and structure of university courses and examination regulations.

Course reform committees will also be set up in each *Land*, involving the *Land* administration, the universities and outsiders with practical professional experience.

In order to help coordination, a second tier of supra-regional committees is being formed. Three exist already—for chemistry, industry and economics—and another five are being planned.

The Permanent Committee has 11 members from the government side and 11 from the universities, comprising seven professors, two junior professorial staff and two students.

Non-voting members come from the German IUC (the employers' association), the Federal Ministry of Education, the Association of Local Authorities and the Federal Labour Office.

As became already apparent in its Report on the Structural Problems of the Federal Education System, the Federal government intends to play a more active part in education.

To demonstrate his keen interest in course reform and to provide a stimulus and basis for discussion for the work of the committee, Herr Jurgen Schmüde, the new Federal Minister for Education, has presented a discussion paper entitled *Twenty-Two Points of Orientation for Higher Education*.

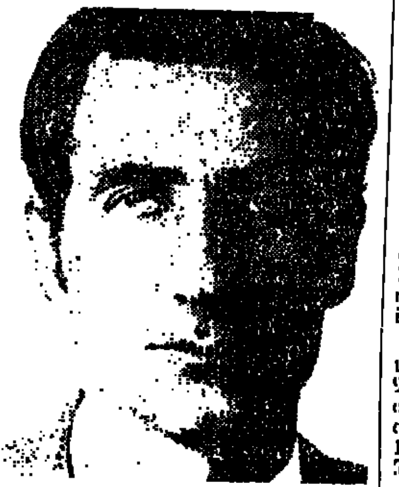
This not only sets out some of the weaknesses of the present course system but also makes concrete suggestions for improvements.

The minister would like more substantial and fundamental reforms introduced than a mere definition of the maximum length of study rule, *Regelstudienzeit*, for each subject.

However, he warned against any imposition of course reform measures from above, i e, the Ministry of Education, and he also feels that "dogmatic declarations of principles" would not advance the reform one bit. He interprets the task of the course reform committee as one of establishing guidelines and recommendations. The real practical steps will have to be taken by the institutions themselves.

This point was not lost on the West German Rectors' Conference which welcomed the minister's initiative as a sound basis for discussion. Herr Schmüde argues for more relevance of university courses, many of which are still geared to the training of future teachers in higher education, and for a closer link between academic and practical training—for example by instituting sandwich-type courses, a novel concept in Germany. On the other hand, he does not deny that a university education consists of more than just conveying practical skills.

He therefore takes up earlier suggestions to divide higher education courses into several stages in order to achieve greater differentiation. First, a three to four-year period of basic study leading directly to a qualification for a job. Second, a period of additional study in which the student may acquire knowledge beyond his original speciality, for example a law graduate in economics. Third, a period of supplementary study, limited to one or two years, for holders of diplomas from advanced technical colleges to obtain a university degree. Fourth, a period of postgraduate study for future research workers and university teachers.


Herr Schmüde

Herr Schmüde regards the first steps of this as crucial and in this context says higher education teachers require more training in teaching skills and methods.

He also says that industry and commerce, too, must modify their expectation from university graduates. This applies with even greater force to the public service.

The minister urges rapid progress in the planning of these reforms so that universities and colleges may begin to restructure their courses from 1980-81 onwards.

France

Top scientists join protest

from Guy Neave

PARIS

The proposal to split up the *Centre National de la Recherche Scientifique*, France's major research body, has been followed by a wave of protests.

The original plan involved hiving off certain sections and attaching them to various ministries. Other bodies, for instance, the Centre for Urban Sociology, face the possibility of total closure. Among the independent institutes to be merged with the central administration is the National Institute for Health and Medical Studies, which will come under the Ministry of Health.

Alongside these institutional changes go severe restrictions in the number of places available to young researchers. In future, it will be well-nigh impossible for researchers starting their career to find tenured jobs.

The short-sightedness of the government's proposal has been condemned in a petition signed by more than 100 leading figures in the world of research, including seven members of the *Institut de France*.

The petition points out that current proposals not only fail to provide places for young researchers, they will also seriously undermine the international standing and credibility of France's research programmes in all fields. "Over the past few years" the petition remarks bitterly, "scientific research has been pared almost to the bone."

"Nor are the consequences likely to be limited to scientific investigation. "France also needs further understanding of her history and of her culture, if she is to maintain her influence in the world. Research is imperative if the country is to face up to its social responsibilities in fields as widely different as architecture, the environment, and the health service", the petition stated.

"It is most regrettable that because an insufficient number of research posts have been created in both the public and private sectors as well as in industry and the central government, talented researchers face unemployment in the immediate future.

"It is even more regrettable given that the country's research programmes needs this type of highly qualified manpower if it is to stay in the forefront of technological and scientific development."

South Africa

Afrikaans students show signs of change

from Louis Hotz

JOHANNESBURG

Small but significant changes in thinking and differences in emphasis have begun to emerge recently on Afrikaans-language university campuses, in some ways symptomatic of changing trends in the outlook of many white South Africans on such basic issues as inter-race relations.

This was evident at the latest annual congress of the national organization of Afrikaner students, *Die Afrikaanse Studentebond*, traditionally a highly conservative body, with a rigid adherence to segregationist principles and group solidarity.

Its sessions, in Bloemfontein, were marked by an unusual diversity of opinion and outspokenness on national polices and on major political questions.

There were noticeable divisions of attitude and approach between ultra-conservative and moderately conservative—even moderately liberal—elements which had to be reconciled after strenuous debate both behind the scenes and in the open.

One of the most controversial questions—that of admission of students of all races, in limited numbers and under strictly defined conditions, to Afrikaans language universities—was eventually settled after strong initial opposition and hard bargaining.

The newly-elected president, Mr Tonns Eloff, pledged himself to a middle-of-the-road policy again Christian-National background with a due recognition of the ri and aspirations of all racial gro

He made a point of stressing t while there were admittedly streams of "philosophy" in t organization, there was no ques of a split—something which at c time seemed possible during t congress.

He also emphasized that, as l as the concept of separate ed identities was preserved, the S *dentebond* under him would eff ally support recent anti-discrim tion measures, despite objections a conservative section of its me bers.

New Zealand

Failure rate 'not high really'

from Lindsay Wright

WELLINGTON

Figures just released by the University Grants Committee seem to suggest an irresponsibly high dropout or failure rate for New Zealand universities—but the committee is quick to put the figures in context.

First year enrolments from 1970 to 1973 were respectively 9,146, 9,566, 9,332 and 9,178. The numbers of students gaining their first diploma or degree qualifications for 1974 to 1976 were respectively 5,676, 5,745 and 5,985.

The relationship between intake and output figures, the committee explained, can only be approximate because the time required to achieve a first qualification varies, from one year in the case of the diplomas, up to at least six years for a medical degree.

The figures suggest, however, that rather more than a third of the annual student intake do not complete a first degree or diploma, and the committee claimed that New Zealand's student admission policy and arrangements of courses provide some explanation of this situation.

New Zealand's university system is open, the committee said, without a highly selective threshold, and students with the basic entrance qualification are free to enrol.

"Personal courses, except for some years in the professional schools, can be chosen from a wide variety of subjects, and credits towards a degree are built up from units, part-units, papers, or credit points. Students can attend for a year or more, then leave for as long as they like, and then re-enrol, perhaps years later, to resume their courses.

"Some are even encouraged to leave to gain experience outside the university for a year or two. Female students can leave after marrying and return years later when their families have grown up.

"With degree credits obtainable piecemeal, there has developed an acceptance of part degrees by employers short of skilled staff.

"Undoubtedly, some students who have failed completely or gained only a few credits leave at the end of the year with no intention of returning."

The committee pointed out that the New Zealand university system differs from others in having a third of its students part-time.

"For these reasons it is almost impossible to ascertain with any accuracy who are dropouts in the sense of having abandoned their studies permanently before they have achieved their original or changed goals."

Mexico

Campus ties

A collaborative agreement at the university level has been signed in Mexico City between Romania and Mexico.

The pact between the University of Craiova (Romania) and the University of Merica (Yucatan) has as its main objective a direct collaboration between the two universities in the fields of culture, education, the humanities and the arts.

Australia

Part of the Melbourne campus.

'Satan bug' team gets ready

from John Kirkaldy

SYDNEY

A committee labelled the Satan Bug Test Team by the popular press has been set up to monitor research at Melbourne University into scientific experiments that could produce contagious strains of virus disease.

The name Satan Bug was taken from the Alastair Maclean novel in which a deadly toxin is stolen from a research laboratory.

Professor John Poynter, Melbourne's deputy vice-chancellor (research), will chair the committee which is made up of six other members of the university, among them the chairman of the department of microbiology, Professor David White, and Professor Jim Pittard of the same department.

At present, Melbourne is not engaged in any research of this kind. The committee will monitor all biological experiments including work with recombinant deoxyribonucleic acid and genetic engineering which might lead to dangerous new life forms.

"We are not engaged in re combinant DNA experiments a this university but it is good t have a biohazards committee read in the top drawer in case it i needed", Professor White co mented.

The committee will be able t forbid university departme chairmen and research work carrying out experiments that co be described as dangerous under i terms of reference.

It will also cooperate with r search grant agencies and any oth national biohazard committe established to lay down and en force conditions for research wi

Chairmen of university depa ments will be responsible for r porting details of current or p posed research that could pos a biological hazard.

The committee will also keep register of all biohazardous resea projects undertaken by the univ sity and receive copies of all com munications between staff membe and the Australian Academy o Science in Canberra, which alread has a committee examining DN experiments.

The commonwealth Scientific an Industrial Research Organisatio the Australian National Universi in Canberra and the University o Adelaide are also keeping a clos watch on biohazardous experimen

Sweden

Researchers need more contact

from Colin Narbrough

COPENHAGEN

Following last year's reform of higher education Sweden's National Office of Universities and Colleges (UHA) thinks the time is right for proper investment in research and the education of research staff.

In a formal statement, UHA called for a joint research policy covering several years at a time, increased contacts between researchers, more contact between them and surrounding society, and increased cooperation between Swedish and foreign research.

Improved contacts are needed to bridge the confidence gap that exists between people engaged in research and those working in society at large. Increased information on research work would play a key part, the statement said.

UHA emphasized that Swedish research resources should continue to be focused in universities and colleges and the agency would also like to see so-called sector research placed in colleges. In the short term the statement drew attention to three important areas of research: social, welfare and care, and arts education.

The agency also underlined the need to promote interest in research work by, for instance, special preparatory courses allied to other instruction. UHA noted sexual bias in recruitment to research posts and urged strong efforts to combat this.

Economic security is a significant factor for people considering research careers and the statement proposed that financial support to students could be continued through staff jobs for post-graduates aiming at doctorates, as well as existing licenciate posts and lectureships in universities.

Sri Lanka

Statistics link with Britain

COLOMBO

The Department of Applied Statistics of Reading University is to help the University of Sri Lanka to develop the statistical unit of the department of mathematics of the Colombo campus, under an agreement sighed by the British High Commissioner, Mr D. P. Aiers, and the Secretary to the Sri Lankran Ministry of Finance and Planning, Dr W. M. Tillekeratne.

Under the arrangement Reading University's statistical unit will provide teaching, research, advisory and data processing services to the Colombo campus, research institutes and industrial and government organizations.

Reading will provide academic and technical advice by an annual consultative visit of two to three months, and provide facilities for staff from the Colombo unit to be attached to Reading, either for training or for consultation and

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Robin McKie, Science Correspondent, reports from the European Space Agency in Paris

British anger as European space costs rocket

On the quiet Parisian street of Rue Mario Nikis, there stands a white-tiled edifice that enshrines Europe's aspirations to become a major force in space exploration. The opulent and dignified interior reflects the seriousness of this aim—just as it masks a growing fury among scientists, indignant over the operation of the European Space Agency.

And in particular, their rage focuses on the vast costs of launching individual missions. The concern of many astronomers has increased to a deep anger which is now being vented over the money needed to support Europe's involvement in the Spacelab programme. British scientists have complained bitterly that the Germans, anxious to please the Americans, are forcing through the Spacelab programme, despite its lack of relevance to our scientific needs.

Indeed, it is estimated the cost of British participation in the seven-day missions, which would involve scientists operating in sealed laboratories in Earth orbit, could reach £5m for each launch.

These projects have value for developing disciplines like material sciences where new welding or crystallizing techniques can be developed in zero-gravity conditions. And the Germans have spent millions of pounds developing an industrial capability to back this up.

But for British astronomers Spacelab is a poor financial prospect compared with X-ray and ultraviolet satellite observatories which can produce useful data for many years.

And similarly the development of Ariane, Europe's own launcher, which will be capable of putting a one-ton payload in lunar orbit, has caused grumbles. This £300m development is not supported by Britain, although we are financing part of its construction through the French industrial involvement.

The high cost, as with other ESA ventures, stems mainly from the agency's principle of *juste retour*. *This means that if* a country sup*plies 10 per* cent of a project's cost, it *will* receive 10 per cent of its industrial contract work.

This induces arbitrary divisions in splitting up responsibility for construction. A firm will get a contract not necessarily because it supplies the best or the most reasonably priced work, but because its country is due a specific share of the overall construction.

Indeed the whole principle of buying European often means greatly increased costs, compared with products which can be obtained in the United States or even Japan.

But this problem has its roots in the very foundations of the European Space Agency which exists to develop space programmes independently of the Americans and to build up a proper aerospace industry in Europe.

This has obvious commercial implications for the future but it also means Britain can have some direct say in formulating space projects. This contrasts with our other main method of putting instruments on satellites — by involvement with launches of the United States National Aeronautics and Space Administration.

These are invariably far cheaper than ESA missions although we can only provide experiments which NASA selects from our offerings. We have no policy voice in projects which might be best suited to the scientific needs of our universities and research centres.

In the past, Britain has had great success in getting packages on NASA shots but this has been due mainly to the agile way in which our researchers have adjusted their experiments to complement those of the Americans.

These projects are put on board on a "no exchange of funds" basis. We pay for the experiment, the Americans provide the launch facilities and supply the data from the instruments.

This compares with the large sums that Britain invests in ESA. About £30m comes from the Department of Industry which committed its entire space budget to the agency under the direction of the then minister, Michael Heseltine. And a further £8.5m comes from the Science Research Council.

The SRC cash, which represents half its space budget, is used only for the agency's science programme. The DoI money goes to the applications programme which has three main areas of commercial involvement—communications satellites; meteorology missions; and Earth resources observatories.

For this financial investment, Britain can participate in ESA's one mission every 18 months—a rather infrequent rate for the amount of cash that is put in.

And this is considered to be another source of increased costs. While the Americans and Russians produce whole series of satellites, ESA produces only one-off missions which mean greatly increased development costs.

Recently there has been strong criticism from British astronomers angered by the costs of these missions. They want Europe to develop a multidisciplinary satellite which would keep all the various scientific disciplines happy. If the agency persists in one-off specialized projects, university departments would have to wait up to a decade before they could become involved in a relevant space mission—far too long for them to maintain a coherent research programme.

The view is that ESA does not have the money to operate specialized missions and therefore must develop "workhorse" satellites which will satisfy multidisciplinary interests and carry out their work cheaply.

But this is rejected by the agency officials. They do not feel they can develop standardized Earth orbit satellites because there will not be a particularly great need for them as many of their projects for the future will involve them in deep space missions. However, the general criticism is accepted, they say, and plans are being prepared for improving the standardization of components for satellites which would result in reduced costs.

However, this commitment to deep space projects, like the Mars orbiter or cometary fly-by, also provokes controversy. It is felt there is far too strong a lobby in the agency which forces through projects that are large and glamorous but which have less relevance to building up a strong background of space science.

Other complaints from British scientists centre on the agency's vast officialdom. Dr Derek McNally, assistant director of University College London's observatory, said: "It is a small enterprise surrounded by a vast bureacracy". And he complained that this frequenly made it very difficult for researchers to obtain data from missions without becoming involved in complex manoevres with officialdom.

And the idea that ESA brings a certain independence to British universities who can now have some say in the directions of projects, was rejected by Professor Ken Pounds, X-ray astronomer at Leicester University.

"We have been working on X-ray astronomy at Leicester for more than ten years now, but have had practically nothing on the subject from ESA. The first X-ray satellite, Exosat, will not be launched until 1981 and even then we will have no guaranteed data return".

He blamed the strong lobby in ESA which pressed for projects to study the magnetosphere, the area of near-earth space where the earth's magnetic field plays a dominant role for syphoning off funds and priority.

And he also criticized the agency for following paths laids down by NASA. "An example is the space telescope mission in which ESA is putting £50 million. This was forced through simply because NASA wanted to have us in so they could get the project through Congress. The mission could quite easily have gone ahead without us and it is doubtful if we will get much back for our contribution".

Professor Pounds described ESA as "slow, cumbersome and unimaginative". And he added: "If we had a chance of getting out of the agency and giving half the money saved to our own space budget, then I am confident there would be an overwhelming vote among British astronomers to do so."

But this view was not shared by Dr McNally, who thought it best for us to stay in ESA and try to improve its organization and policy from within.

And there is always the fear that the Americans may become increasingly isolationist in their allocation of room on their own missions. Taken to its extreme, this would leave Britain with no space outlet if we did not have a European connection.

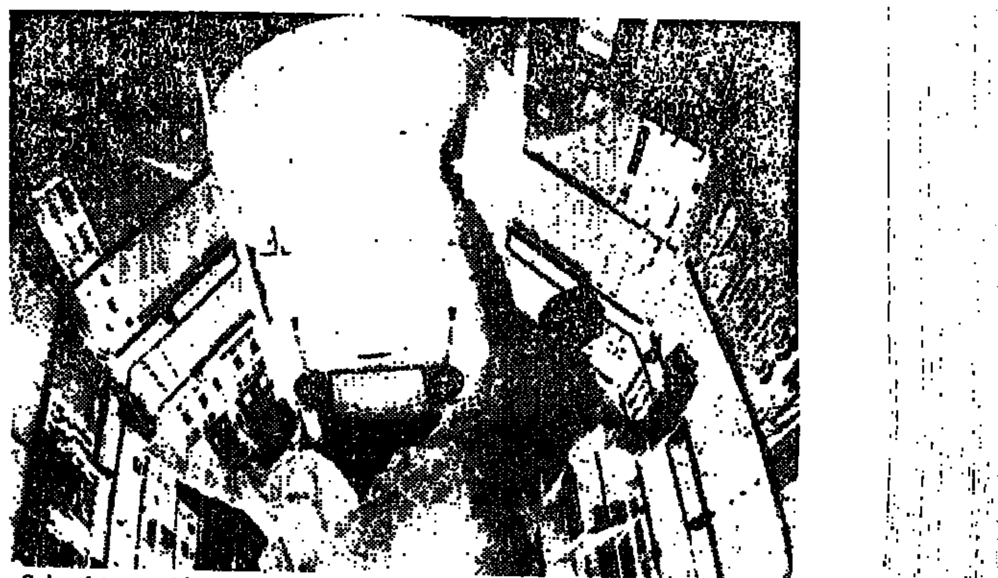
By splitting our interests between the Americans and Europe—as we do now—many believe we are getting a good deal out of both worlds. On one hand we get good value but little say in policy; on the other, we have to pay a large amount, but do have some say in the direction of research projects.

And ESA's proponents in Britain can also point to the excellent industrial return we receive for our investment in the agency's applications programme. In terms of contract costs, we get back about 60 per cent of what we put in. Only Holland, France and Germany appear to get a better deal because there are ESA bases in these countries which greatly boost local, minor industries.

As Ted Mallet, the Department of Industry's representative at ESA, stated: "We in Europe have got to try to work together. We must develop an independent European space industry—although there is still no reason why we should still not cooperate with the Americans."

Just how this aim is to be achieved is going to be a very tricky matter in coming years.

Meteosat, the first European meteoroligical satellite, which was launched in November, 1977.


Scientists working on a spacelab mock-up at the technology centre at Noordwijk, Netherlands.

Impaled on the spikes of a multinational dilemma

The European Space Agency is not only caught on the horns of a dilemma, it is firmly impailed on the spikes. That uncompromising view of the agency comes from a member of its science planning department, Dr George Haskell, whose solar system working group faces many of the severe economic problems which beset the organization.

Indeed, a closer examination of the group's work reveals a pattern typical of the many difficulties which afflict ESA's multi-national set-up. A report by the group has just presented details of the minimum programme needed to maintain a European scientific community in the related subjects of solar system astronomy, geophysics, atmospherics and plasma physics.

This would include: a lunar orbiting satellite, followed by a similar mission to Mars; a cometary fly-by project in cooperation with the Americans; an atmospheric laser probe; a solar telescope; a climatology satellite; and several Spacelab projects which would involve complex experiments in plasma science, earth resources and infra-red astronomy.

Such a programme would cost £300m over the 1980-1990 period —equivalent to the entire ESA science programme budget for the decade. Its implementation would completely rule out other areas of scientific research—including space telescopes for X-ray, gamma-ray and ultra-violet astronomy.

So the group was forced to produce a heavily curtailed list of missions which it described as "sub-critical" because it represented only one mission per decade for each discipline. This included a lunar orbiter, a solar telescope, and a few space plasma, atmospheric science and geodynamics missions.

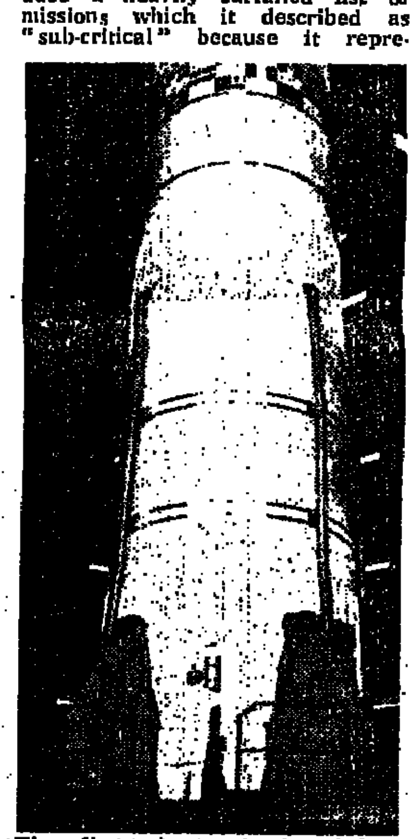
"Any further reduction would imply that some disciplines are excluded from the ESA programme and the group considered such an option as totally unsatisfactory", the report added.

But when launch costs are included in the development bill of the curtailed programme, it still exceeds the possibilities of the present mandatory scientific budget of ESA. So the science prospects for ESA can be seen to be very much on the horns of a dilemma, if not impailed upon the spikes.

The group then considered the possibility of arranging increased science investment from ESA members but wisely concluded that this move would have little chance of success in view of the present political unrest about the agency's funding.

However, it was more optimistic about the creation of an optional series of scientific missions which would operate in conjunction with the present mandatory science programme but which would only receive funding from countries who specifically wanted to participate in a particular mission.

But these suggestions represent only short-term measures which will have little real effect on the long-term operation of the European space programme. Sooner or later, more drastic and effective moves will have to be made to ensure the future effectiveness of the agency.


The first stage of the Ariane launcher in its assembly dock.

Facts and figures

The European Space Agency

Member states	1977 contribution per cent
Belgium	4.31
Denmark	1.44
France	34.25
Germany	27.26
Italy	9.93
Netherlands	2.91
Spain	2.4
Sweden	2.43
Switzerland	2.02
United Kingdom	12.71

The 1977 ESA Budget

	Millions of accounting units (approximately two units to the pound)
General budget	59.67
Science budget	67.86
Individual projects:	
Meteosat, for meteorology study	33.67
OTS, communication satellite	35.31
Marots, maritime communications	33.67
Aerosat, air traffic communications	2.57
Ariane, rocket launcher	133.32
Spacelab	99.83
Earthnet, Earth resources	0.8
New activities still to be allocated	27.83
Unallocated	0.21
Total	494,78

British split by political differences

from Peter David

HAVANA

What has blunted the impact of the British contingent has been the continuing strife in its own ranks. The decision, before departing for Cuba, to drop seven Communist Party members has led to the delegation steering committee being roundly condemned here, and delegates voted overwhelmingly for the restoration of the purged communists.

The vote reflected widespread annoyance among delegates that there had been any political vetting of a delegation which had advertised its role in Cuba as the demonstration of British tolerance of political dissidents.

Another ramification of the cool relations between the steering committee and delegates was that the constitutional status of the British contingent has become confused and ambiguous.

Nationally activities were to be directed by a steering committee drawn from all the youth and student bodies formally affiliated to the British preparatory committee, an ad hoc body formed specifically to plan the British role in the festival.

Included in the steering committee were Trevor Phillips, president of the NUS and delegation leader; Peter Mandelson, British Youth Council chairman and deputy delegation leader; the British Council of Churches, the AEUW/TASS, the National Association of Youth Clubs; and representatives of the student wings of the Labour, Liberl and Communist parties.

It was on the basis of this broad spread of political interests that the delegation intended to make its contribution to the festival. But the refusal of both the Foreign Office and the British Council to contribute financially towards the costs of attending meant that the composition of the delegation has been determined as much by who can afford to pay as by the role in Britain of the organizations they represent.

The British Youth Council, for example, which subsumes nearly every youth organization in Britain and which has never taken part in a festival before, could afford to sponsor only one representative. In contrast there is a substantial rump of individuals belonging to trade unions which were not involved in the festival preparations.

Soon after arriving in Havana the delegates, including a large number of Communist Party members, voted to change the constitutional arrangements so that the delegation itself had the right to veto decisions taken by the steering committee. Speeches prepared in advance by the committee, on human rights for example, would have to reflect the views of the delegation in Havana and not the British preparatory committee.

The status of the delegation in Cuba became equally fraught as a result of its inability to pay an appropriate contribution of between £4,000 and £6,000 to an international solidarity fund enabling poorer countries to send representatives.

Only a last-minute intervention by Charles Clarke, former NUS president and a member of the permanent commission set up last year in Cuba to plan the festival, prevented a public denunciation.

Arguments about flags, steering committees and money have prevented the British from making an early impact on the important substantive issues under discussion. Five centres have been set up in and around the capital to debate world peace, colonialism, the economic order, the place of students in capitalist societies, and education.

No votes are taken at any of the debates, and statements adopted at the end have to be unanimous, an arrangement which gives even small delegations like Britain an effective veto on some issues. But festival organizers emphasize that the anodyne final statements are less significant than the fact that thousands of young people from all sorts of countries have an opportunity to meet and debate with each other.

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30 years of the Central Bureau for Educational Visits and Exchanges

The resilient web of international swops

Like a spider weaving its intricate web, so the Central Bureau for Educational Visits and Exchanges, which recently celebrated its thirtieth birthday, has built a worldwide network of contacts.

To the one question of what the bureau does there are nearly 50 answers. It is for example the negotiator of up to 6,500 language teaching assistantships in nearly 80 countries, of 4,000 partnerships between colleges, universities and schools and their counterpart overseas.

It is also the European centre for study visits to combat youth unemployment, while in the range of more unusual activities it provides a multi-disciplinary team helping the Southern Sudan with the development of school and university sport and physical education.

Founded in 1948 by the then Ministry of Education and the National Commission for Unesco, the bureau has the status of a government agency in the educational sphere, roughly equivalent to that of the British Council.

Its budget is provided by the Department of Education and Science, the Scottish Education Department and the Department of Education for Northern Ireland on a three-year "rolling" grant basis, which last year amounted to around £800,000. They have overall policy control on bureau services and act in consultation with other government departments and agencies to avoid overlap, duplication and double funding.

The bureau's original remit was very broad. Its functions were first to advise and assist institutions and individuals involved in United Kingdom education in all matters relating to educational visits and exchanges with other communities.

Second, it was to keep in touch with the activities of existing agencies both in the United Kingdom and other countries concerned with similar work and cooperate with them. Where necessary it was to undertake direct responsibility for educational visits and exchanges or secure and assist the development or establishment of other suitable agencies.

Speaking about its role in those early days Mr James Platt, its director for the past 15 years, said: "Already at the time of its creation, in spite of the economic conditions caused by the War, United Kingdom teachers had renewed their contact with their European counterparts and exchange visits, although limited to Western Europe, had begun.

"However, it was felt by various bodies involved that an official organization was needed to advise and arrange international contacts, to set standards and control arrangements as well as act as a watchdog for British people going abroad and foreigners coming here."

Until 1963 the bureau played a small but central role in Western Europe. Today it has a key position as a major professional organization of world standing with active contacts in well over 100 countries and territories. Utilizing the network system it has been able to spread its work and influence without having overseas representation of its own and without being a funding organization.

Around 108 major fields of work are being undertaken, stretching from primary to further and higher education, special education and youth service work. Many began in 1949 and were established at the request of the different educational bodies and organizations in the United Kingdom and overseas.

For example, the DES requested a scheme for technical and further education college links and exchanges. Several recent projects were instigated by polytechnics, such as placements in French university institutes of technology and others by universities such as that for the coordination of preparatory courses for assistants.

Requests to set up projects do not come only from institutions; individual ideas are also welcomed and often emerge during the bureau's regular meetings with institutions. Indeed the principal of Nelson and Colne College's idea for linking United Kingdom tertiary colleges to United States community colleges is just beginning to get off the ground. A contingent of senior United States education officers is expected to arrive shortly to discuss the matter.

The bureau is now responsible for the administration of schemes such as the placing of language assistants, teacher exchanges, study visits, linking further and higher education institutions, exchanges in adult education, special fields such as the handicapped, and organizing international meetings. In fact there is never a shortage of work or ideas.

It now also has an active and important role as an advisory and information service on visits and exchanges, not only for all educational institutions, their staff and students but for parents and young workers.

Much of this is contained in the several bureau publications which again reflect the breadth and variety of its work. *Young Visitors to Britain* has a vast circulation, nearly half a million, covering 90 countries, while the most popular in this country is *Working Holidays*.

One of the bureau's major triumphs has been its ability to successfully enrich the educational system while lacking either promotional or development funds. It has found ways of introducing new projects and services on a largely self-financing basis and has been the technical and practical base behind most educational visits and exchanges overseas.

Savings resulting from its work are estimated at over £2m, while its negotiating ability on behalf of other organizations results in an income from educational visitors to Britain of over £15m per annum. Not surprisingly last year it was given an accolade in the *Review of Overseas Representations* published by the Central Policy Review Staff of the Cabinet Office.

One major achievement over its 30 years has been contribution to the concept of in-service training abroad, to the point where this has now become rooted in the United Kingdom education system. This has been effected by expanding teacher exchange with other countries to the extent that so far 50,000 exchanges have taken place in most European countries and America. They have recently began with Russia.

The promotion of in-service training has equally been achieved through the linking and twinning of institutions of all kinds. The bureau has had a major success in France where 35 *départements* are linked with an equal number of local education authorities in this country. The central bureau is also making inroads in the further and higher education sector, where last year it increased links with France, Germany, Switzerland and Sweden, among others.

Undoubtedly another outstanding achievement has been its language assistant schemes which has greatly reinforced language teaching in this country. There is now interchange between 75 countries covering [illegible] languages in Europe, North and South America, Africa and the Middle and Far East, and this is expanding all the time.

Since 1961 the bureau has initiated over 42,000 postings of foreign language assistants to British schools and colleges and 26,000 to institutions overseas. Every year it deals with 6,500 assistants.

Mr Paddy Carpenter, assistant director of the bureau, said that in recent years as a result of expenditure cuts, LEAs took a far closer look at the way they used foreign language assistants. "This has led to a much better use as well as some recognition of their professional status."

One of the bureau's most recent developments has been an increasing contribution towards 16-19 and adult education. Judith Powell, head of further and higher education, points out that there has been a major shift of emphasis away from higher education, reflecting perhaps current political and educational concerns.

Both the DES and Mrs Williams have taken greater international initiative in recent years, thereby giving much support to the bureau's work. Two years ago the Secretary of State set the scene for a further development when she suggested to Dr Rhoda, the German Minister, that we should expand a series of college schemes, already existing with the Netherlands, to Germany.

The Netherlands scheme is imaginative and involves at least five colleges who are due to begin twinning with their counterparts there in the autumn. Ordinary National Diploma students of construction at Barking College will study the development of waterways in Dockland, parallel work is being done in Holland, and when completed the two groups will compare results.

Mr Platt does not offer a prescription for the future. He is concerned that it should remain at all times responsive to existing and new "constituencies" requests.

There is one area where he foresees the possibility of a future advisory role. He believes that, because of the increasing international outlook, colleges already closed and those about to close should seriously examine the prospect of running courses for foreign students or offering courses with an international connotation to students here.

Patricia Santinelli

Exchange students on an archaeological dig in France.

American way of philosophy

Nowadays it helps to be a mathematical logician who can teach Buddhism. Or an epistemologist who publishes on feminism. Or a philosopher of language with a professional interest in madness, or phenomenology. The hard-nosed young analytical philosopher coming out of Harvard or Princeton or Chapel Hill needs a soft field if he wants to be a marketable commodity.

In America philosophy is a business. The American university is a market-place. Students sign up for, pay for each individual course. Departments, and colleagues within each department compete for the enrolment of the consumers. And so the young philosopher is pulled in two directions. He has to help his institution show a high profile in the profession and look good in the publication game and he has to appeal to the students to whom he hawks his product in the face of their fierce consumer resistance.

American philosophy and the British kind share a dominant tradition, that of analysis of one sort or another. Much of the way they differ is due to the peculiarly American market in jobs, and course credits. The market in philosophers results in the publication game. The market in philosophy causes philosophers to advertise themselves in the classroom. Market forces result in the massive output of journal philosophy, and in the philosopher's need to cater for undergraduate whims.

In 1978 there are 9,187 philosophers teaching philosophy in the United States. But not all philosophers are lucky enough to be teaching. Times are hard. At the American Philosophical Association meeting at New Orleans in April 1976 the Sheriff's Department of Jefferson County, Colorado, had a table recruiting philosophers for its police force.

According to Dr Norman Bowie, then executive secretary of the APA, they wanted another Plato specialist. (They specified in addition that applicants should "provide their own guns and boots".) The department *already had* one deputy sheriff with a PhD in philosophy from Southern Illinois University.

He'd done three good jobs for the sheriff. He had successfully defended the department over the condition of the county jail, protected the department's interests when the county government was computerized, and written a 125-page analysis for the department which got its budget increased by 40 per cent in the first year and another 20 per cent in the next. So the sheriff of Jefferson County was looking for more in-house intellectuals.

Jobs are scarce. At the APA meeting in Washington last December 670 people were looking for jobs, 35 up on the previous year. The number of institutions interviewing went down from 70 to 60. A sign of the times. Only this month the APA changed the title of its listing of jobs from *Jobs in Philosophy* to *Jobs for Philosophers*.

Some words about the prevailing "analytical tradition". Of course, it embarrasses the professional to use broad brush strokes in sketching his field. Simple talk about the analytical tradition is liable to be fanciful. But on some things everyone can agree.

One is that the analytical style is ideally suited to the professionalization of philosophy. Clear-cut theses, neat counter-examples, knock-down arguments, elaborate formal or informal theories of the logical structure of some chunk of discourse, are the bread and butter of analysis. And there are fairly objective criteria for success. Anglo-American philosophy prides itself, rightly, on its relative rigour. (Its villains are the undergraduate heroes, continentals like Hegel and Heidegger, musicians without musical ability who compose sloppy metaphysics instead.) But this rigour and hostility to nonsense have one drawback in the market-place. They make philosophy very unsaleable to the student consumers.

Another is that the analytical tradition is not a native British or American product. British philosophy is as much Viennese as Oxonian even today. In America Carnap's Vienna rather than Wittgenstein's impressed. So the contemporary American style, though simultaneously more pragmatic and formalistic, is hardly all-American, unlike that of William James who set out to produce a truly American philosophy, suitable for consumption in Cripple Creek as well as Harvard. (Only two young outsiders were admitted to the Vienna Circle.) Both were subsequently influential. They were W. V. O. Quine, and A. J. Ayer. Quine is, by common consent, the ablest living analytical philosopher as well as the most widely imitated, for style as well as content.

So the historical sources, the important figures, the problems which make up the material of British philosophy and American philosophy are much the same. The differences are partly a matter of sociology. For example, one difference is that British philosophy to this day remains relatively symbolshy. The British professional prides himself on his subtlety and his way with words. The American scares his peers with formal systems and completeness proofs when he wants to make a mark in the profession.

There are plenty of reasons for this. The sacking of Bertrand Russell from Trinity in 1916, the death of the mathematician/philosopher F. P. Ramsey at Cambridge in 1930, the prominence of the informal Moore are some. But more important is the fact that Oxford classicists were never comfortable with logical symbols. Oxford began to control British philosophy after the war through sheer weight of numbers. Besides Wittgenstein, whose views spread out from Cambridge by rumour, Oxford managed to monopolise the talent. And the background of the typical professional appointed in the 1950s and 1960s was Greats, or sometimes PPE, which bred a fear and contempt for mathematical logic as a philosophical tool.

In the United States, unlike Britain, the formal approach to philosophy stayed healthy. Again there were many reasons. The unimportance there of a classical education is one. Another is the fact that mathematics courses were and are available for credit even to philosophy majors at any American university. You aren't an arts man in the United States until your junior year in college usually.

But the most significant, most powerful source of difference is this. In America the academic is a junior executive working in a corporate enterprise appealing to a reluctant market and performing for senior executives, the administration. In Britain the academic is more like a civil servant.

The game is different. We have a salary scale, they have pretty well fixed salaries for each of the grades, with merit increases, and the possibility of very big salaries to attract the occasional super-star. The departments compete with one another for enrolments, the universities compete in the publication game. All of this affects career structure, and ultimately what philosophy is.

Take the finishing graduate student entering the job market. What hurdles does he face with his ABD degree (all-but-dissertation) or, better, with his finished PhD? His ABD or PhD has taken the typical four or five years. He spent three of them on course work. His dissertation is, or will be, typically, 50,000 words long. His aim in graduate school was not to go through the hoops and end up with just a scholarly thesis on the library shelf. He aimed to produce something, maybe only a few pages of his dissertation, of publishable quality.

He will have chosen a fashionable topic. Suppose he is in moral philosophy. He will have guessed which topics will soon be played out. By now, abortion, war, even medical ethics are bad bets. He will have written a lively thesis on affirmative action, or the Bakke case. In the philosophy of science, for example, he would write on Feyerabend, and avoid Popper, Kuhn, and quantum mechanics. The publication game begins in graduate school. Our graduate student will attack some recent and well-read article in his dissertation, and then publish it, because nowadays it is a good idea to have a short discussion note or two to get a foot in the door at the APA interviews.

Most of the hiring is done through the annual APA meetings. Jobs are advertised in the APA listings which come out about five times a year. The big issues might contain 100 or so jobs. But many of them are temporary (or not "tenure-track"), and maybe half are for specialists. So our candidate will find that he can apply to only ten or so. It will help him if his thesis advisor is well-known and has hustled for him at conferences and colloquia.

The APA meeting will be a harassing time for our candidate even if he is lucky and gets plenty of interviews and can show his samples of written work. If he isn't lucky, if he does not come from an Ivy League school, he may get rattled when he sees professors from prestige schools chasing up women and minority candidates to interview to satisfy their affirmative action programmes back home.

Suppose he is lucky and survives the interview and gets invited to read a paper at the university, and survives that and gets appointed. He will be offered short-term contracts, one to three years, as assistant professor. At the prestige schools his job will almost certainly not be tenure-tracked. At lesser schools, Dean permitting, he can expect to last up to six years this way. So let's suppose that after six years he comes up for tenure, and promotion to associate, which almost always coincide.

Tenure is the big hurdle. Nowadays the only reason for tenured faculty departing is medical. Departments are careful when appointing a colleague for life. So our assistant professor will have begun his tenure campaign as soon as he is appointed. Each paper accepted for publication, each review even, is a small victory. For the publication game in philosophy is quite unlike the game in the sciences. A physicist can expect to publish half-a-dozen articles a year when he is in his stride supervising a few graduate students. In physics several names go on each paper. The tally mounts quickly. But in philosophy you submit and, if your name isn't familiar, you expect rejection.

Dr Richard Lineback of the Philosophy Documentation Center at Bowling Green, Ohio, lists 98 American philosophy journals in the *Philosopher's Index*. They range in prestige from, say, the *Journal of Philosophy* and *Philosophical Review* downwards. Big names publish in the top journals and the young professional tries to be in with them. On average perhaps 90 per cent of the manuscripts submitted to journals are rejected according to their editors. Oddly enough, this percentage seems not to vary with the quality of the journal. An explanation: philosophers tout their product around the journals in order of preference, or roughly, prestige. A good proportion of published articles were once rejected somewhere else. So the rate of rejection can be more or less constant. And also somewhat misleading.

About 1,800 articles a year come out in the American journals. Or about half the total output of the West. Everyone agrees that only a small proportion are read, or are worth reading. Everyone agrees that the journals are full of garbage and that nothing can be done about it. The joke is, in a way, on the universities. They inflate the publication requirements, the faculty produces, the publishers make a profit, and the universities pay through their library costs.

Our assistant professor should publish about one decent article a year to stand a good chance of getting tenure in a school with a graduate programme, which means a school comparable to a British university. Reviews will count, but nothing like as much as articles. And a book, preferably *not* culled from the dissertation, will help a lot. When his case comes up all these publications will be scrutinized by the department, and usually by outside referees too.

But there are two fronts to the tenure campaign. The other one is enrolments. The department's prestige in the university, and its budget too, the number of teaching assistantships and junior faculty, will depend on student enrolments. It's the duty of a faculty member to enrol as many students as possible in his courses. If he is coming up for tenure it will help his case, in the department at least, if he pulls them into the classroom.

There are plenty of ways of enrolling students. One is to teach well of course. Another is to look youthful, at least in Mickey Mouse courses. To seem not too separated from the student experience. Yet another is to give a good proportion of As and Bs. About 80 per cent in the top two grades is a sensible choice. And you can offer silly courses (like "The Philosophy of Folk-Rock Lyrics") if the department will allow it. Although there is now some competition from other humanities departments for this market.

One casts far and wide for students. Philosophy no longer has much pull, even to those who do not know what it is. The Vietnam war is over. America grows daily more conservative. Philosophers have now started casting for the young. From Montclair State College, New Jersey, Dr Matthew Lipman runs the Institute for the Advancement of Philosophy for Children, which is very active. Lipman writes novels as well as Instructors' manuals and introduces the elements of philosophy and logic to little Americans.

The populism in American philosophy teaching which grew out of appealing to students has become respectable and is even feeding back into journal philosophy. One symptom is the string of practical reasoning books now appearing on the market, catering for the student who shuns the more austere, mathematical, impractical formal logic courses.

Michael Scriven has written the prototype. Robert Fogelin at Yale has followed up with a stuffier elite version. An un-American disdain for formalism has begun to penetrate even journal philosophy. A second symptom is the decline of meta-ethics. Ethicists worry about real-life issues rather than concepts and publish along with lawyers in *Philosophy and Public Affairs* which, self-consciously worldly, has become the leading journal in moral philosophy. Normative ethics is good for enrolments, too.

It's time to offer the reader some theory, even if only of the amateur sociological kind. British and American philosophy are the same in substance deriving from the same tradition. They differ because the American university is a miniature corporation and because the British university isn't. Market forces fuel the publication game on the one hand, and the trend for philosophers to teach less philosophy and impart more in the way of skills, like remedial reasoning. The market turns the American philosopher into an executive. Eccentricity is less tolerated, greater productivity expected.

British philosophy is much less professionalized. There is nothing like the APA with its caucuses, committees and annual meetings to distribute young talent. The British Joint Session, held every July, is just an annual get-together to see old friends, drink some tea and beer, and hear a few papers. Appointing in Britain is simpler. It's a smaller philosophical world. Everyone knows everyone else. References are trusted. There is less need to play the publication game. And British philosopher's don't by and large.

Tenure comes earlier, and fairly automatically. University administrations don't yet have the opportunity to interfere with it a great deal, however much they would like to. British philosophy is still tweedy, pipe-smoking, confident of its worth, middle-class. It has something of the indefinable quality of old Ealing movies. Eccentricity is tolerated, even encouraged. A visit to the Joint Session would convince you what a strange lot we are.

A marxist would have a simple account of all this. Putting it all down to rampant capitalism in the States, and the smugness of the ruling class in Britain, operating through Oxford. There may be some truth in this, in fact there probably is. But a true and simpler answer is this: the difference between British and American philosophical activity is like the difference between British and American television. As Edward R. Murrow said to Malcolm Muggeridge 20-odd years ago: You can't say which is better; television is different because the two countries are different. The same goes for philosophy, too.

Peter Gibbins

The author is visiting associate professor at the University of Delaware.

In America the academic is a junior executive working in a corporate enterprise, performing for his seniors. In Britain he is more like a civil servant

TALKING POINT

Jonathan Cohen stirred up a hornet's nest with his analysis of scientific philosophy (THES July 14). Here is some of the response.

What scientists can learn from Popper

Conjecture refuted?

Sir,—If I believe that the aim of science is to enable mankind to gain the most benefit (practical or aesthetic) from the potential of nature; that the boldness of a conjecture is the only convincing pointer to its likely ultimate value should it prove successful; and that the ability of a conjecture to withstand the severest attempts at refutation is the only reliable test of its reliability; then am I, according to L. Jonathan Cohen, a Popperian or a Baconian? Or am I in fact a *living refutation of Cohen's conjecture that Popper's epistemology is incompatible with a socially derived scientific ethos?*

Cohen's question concerning the circumstances in which we would use a new plane or medicine is from this point of view a red herring. In such a situation the reliability of the relevant hypothesis is the only concern, and so demonstrated resistance to falsification is the only criterion: boldness is irrelevant. In determining basic research priorities, by contrast, it is the ultimate potential value of a hypothesis in relation to its demonstrated reliability that matters, so both criteria are applicable.

I would like to add some comments concerning my own field of research. Firstly, research priorities in mechanical engineering science, as in other applied fields, are obviously guided more by immediate, "bankable" utility, so that the boldness of a conjecture must take second place to its relevance to the current boundaries of technique.

Secondly, the spirit of Popper is all too rarely present in this field, and as a consequence a hypothesis is too often taken to be "proven" if it has been shown to be successful in predicting experimental results within some arbitrary domain around the parameters for the experiment from which the hypothesis was derived in the first place, with no attempt to devise the sharpest possible test between the established hypothesis and possible competitors. (This may be bad Baconism, but the point is that an infusion of Popper would make it less likely to occur.)

Finally, the Popperian conception of scientific "knowledge" as the body of bold conjectures that have *not yet* been refuted provides a constant reminder that technical knowledge is never technical certainty. Any designer, any day, may unwittingly be designing-in the very conditions that falsify the long-established rule of thumb on which the design is based. It seems to me that Bacon's view of science is ultimately founded on arrogance; Popper's, on humility.

Yours sincerely,
R. S. HAINES,
Department of mechanical engineering,
University of Newcastle on Tyne.

Problem of induction

Sir,—L. Jonathan Cohen shows a complete misunderstanding not only of Popper but also of Hume in their relation to the problem of induction. It is not a matter of taking your pick among philosophies according to your social objectives, it is a question of what is valid reasoning. It is not a question of relevance but of truth.

Hume showed quite conclusively that induction is not a rational process, that there is no reason to assume that the future will be like the past, or that unobserved events or instances will be the same as observed ones. What Popper has done is to accept this and to show how nevertheless science can be rational. The hypothetico-deductive process is rational but not certain. There is no certainty.

Mr Cohen's examples of medicines and aeroplanes bear this out. There is no certainty here either. Exhaustively tested medicines and aeroplanes do sometimes kill people who put their trust in them. There are no "adequate test-results" and Popper has shown how there never can be.

Yours faithfully,
ROGER JAMES,
9 Eastern Villas Road,
Southsea PO4 0SU.

The correct role of falsification

Sir,—Jonathan Cohen reveals an extraordinary misunderstanding both of Popper's philosophy and of the aims and methods of scientific inquiry. Popperian scientists, Cohen claims, say that there is "no role in science . . . for attempts to assess evidential support for a hypothesis." Once a hypothesis has been proposed they "seek only to falsify it or to measure its informativeness."

Falsification is indeed central to Popper's scientific method; but every critical attempt to falsify that fails (i e every "corroboration") becomes part of the evidential support for a hypothesis. And the more severe and ingenious our attempts to falsify, the more support they provide if the hypothesis survives. This is what hypothesis testing is all about! If our test could have but one outcome—hypothesis supported—there would be no point in performing it, and common sense therefore dictates that we should formulate our theories in such a way that they are exposed as clearly as possible to falsification.

Imagine, then, that we have such a theory and subject it to searching tests (potential falsifications). Three outcomes are possible:

(1) Falsification clearly successful. Now this gives us more information about the "ultimate truth" of the theory (we know it is not true) than any number of corroborations (which certainly would not allow us to conclude that it is true)—this is the logical asymmetry so central to the Popperian view. We know that a new theory is needed, and we know something about the new characteristics that it must have.

(2) Test results inconclusive. This is a common, and usually frustrating, outcome; we must now re-assess the intrinsic testability of our theory and re-examine the methods used for testing it. Popper, incidentally, pleads that we should not abandon our theories too readily—a recognition, surely, of that strange world of logical certainty and methodological uncertainty that every scientist lives in.

(3) Falsification clearly unsuccessful. The evidential support (degree of corroboration) for our theory is increased. Now most scientists are far from dismayed at this outcome, and may show sentiments that Cohen would judge to be distinctly unPopperian. But to make such a judgment would be to misunderstand the Popperian view—that the evidential support for a theory is nothing more than a critical report on past performance. This support cannot be used to predict future performance of the theory, though it can help us to predict future events in those areas in which it has already "proved its mettle".

So, although evidential support (however extensive) cannot be used to justify belief in the truth of a theory, or in the probability of its being true (except in a Bayesian sense), it can certainly be used to justify applying the theory to practical problems. In Popper's own words, "the degree of corroboration of a theory is a rational guide to practice". Take Cohen's own example: "You would not wish", he says, "to trust your life in a plane, or a medicine, which had been made in accordance with the boldest conjectures that have hitherto resisted falsification".

Now Cohen's earlier reference to "the bolder—the more improbable—the hypothesis" leaves us in no doubt as to his use of "boldest conjectures". But in what sense is the bolder hypothesis more improbable? Popper's writings make it clear that "improbable" here means "highly falsifiable" (highly testable). The "boldest conjectures" would therefore be a set of statements offering a comprehensive, detailed and specific description of the plane (or medicine) and its performance, and as such would be clearly exposed to many observations or experiments that are potential falsifiers. The more such potential falsifiers that derive from the conjecture set, the more improbable (in a frequency sense) its truth would be since the number of ways in which the plane, or medicine, might turn out to be other than conjectured would be large.

So Cohen's "crucial Baconian requirement . . . that we should know how reliable are the predictions that issue from a scientific theory" actually demands the Popperian approach; for it is only by seeking to falsify the predictions that we can hope to establish the limits of reliability (conversely, tests which seek "positive corroboration" usually provide little or no information on the limits of reliability).

Thus in saying "Popperian science . . . cuts itself off from technological objectives, because its epistemology rejects inductive reasoning", Cohen reveals his gross misconception of Popper's views.

Yours,
COLIN FERGUSON,
Lecturer in geology,
Nottingham University.

An unreal dichotomy

Sir,—Mr Jonathan Cohen discusses a problem arising from the opposition between "Popperian science for intellectual glory and Baconian science to help us in our dealings with nature" to quote his own words. In my view his dichotomy is unreal and arises from a confusion over a number of aspects of science.

One can list these as confusion over, (1) the motives of scientists, (2) the social justification of science, (3) scientific method, (4) the reliability of predictions made on the basis of scientific theories, and (5) the logical validity of scientific theories. I will follow the example of Mr Eric Morley by taking them in reverse order.

Sir Karl does, after all, entitle his work *The Logic of Scientific Discovery*, and, to put it simply, he asks "When we say a scientific hypothesis is true does this statement make sense?" His claim is that viewing the theory as an exercise in inductive logic does not make (rigorous) sense but viewing it as an exercise in deductive logic does, provided we introduce the twin ideas of falsifiability and of testing.

This simple view is sufficient to illustrate that the Popperian and the Baconian theories (to use Mr Cohen's own nomenclature) are theories about the same set of scientific hypotheses. There are two views of the logic of science both concerned with the content of science as whole. In this connexion it appears that Mr Cohen believes that Sir Karl introduced some fundamentally new method of evaluating hypotheses (of any kind).

Sir Karl himself points out the use made in developing the principle of falsification of the *modus tollens* of classical logic (e g p 76, ninth impression, paperback of his book). Furthermore, this technique of testing falsifiable hypotheses has long been the foundation of (part of) as mundane a subject as industrial quality control.

Coming to my fourth point, the question of reliability (which Mr Cohen does not define) of predictions, it should now be clear that any particular view of the logic of scientific discovery is independent of the content (and therefore of the reliability) of any particular scientific theory.

In fact reliability is independent of whether or not there is any theory at all. For instance scientific work may uncover statistical regularities that provide reliable predictions in the absence of any theory. An extreme example is the "four-colour map problem" where we had (at least until recently) total reliability of prediction with total absence of a theoretical (i.e. mathematical) foundation.

In contrast econometric theories are often characterised by the vigour and sophistication of their logical models and at the same time by the extreme difficulty of deriving from them predictions that are reliable by any standard.

The question of "evidential justification" is, in this context, a red herring. Any individual scientific hypothesis, theory, observed rule, etc. can only be justified (whatever that might mean!) by examining the evidence because there is no alternative open to us, whether or not we prefer an "inductive" or "deductive" view of scientific logic as a whole.

Given that there is only one science, not two as Mr Cohen believes, I need not spend long on my third point; that of scientific method. There is an almost infinite variety of methods usable in science. To divide them into Baconian or Popperian groups is both arbitrary and futile.

My second point, that of the social justification of science, is concerned with the false antithesis between two types of science concerned, either "to help us in our dealings with nature 'or' for intellectual glory". Quick reflection should show that scientific work can be, and usually is, concerned with both.

To take an example at random, into which category should we put the Michelson-Morley-Miller, ether-drift experiments at the turn of the century, given the enormous long-term implications of their work? Science has always been concerned simultaneously with both practical and intellectual rewards at least as far back as the time when men first investigated the properties of a right-angled triangle.

My first point, the motives of scientists themselves, can be dealt with on the same basis. Mr Cohen presents us with a picture of scientists either anxious "to learn how we can ally ourselves with Nature" or merely "motivated by intellectual curiosity" as though these were mutually exclusive alternatives. They are not merely not mutually exclusive, they are not even exhaustive. Common sense would show that scientists work for any mixture of motives—the salary is reasonable—there is a wife and kids to support—it is better than selling insurance, etc, etc.

In short the dichotomy that Mr Cohen discusses refers only to the logic of science, not to its content, and neither the content nor the purpose of science shows any sort of related dichotomy. Therefore the problem Mr Cohen raises does not exist.

Yours faithfully,
J. P. CONLAN,
Lecturer in the School of Management,
Buckinghamshire College of Higher Education,
High Wycombe.

Technology is different

Sir,—The answer to L. Jonathan Cohen's thesis about Popperian versus Baconian science is that technology is a quite distinct enterprise from science. It is based on a desire to improve the handling of the practical problems of life within delimited areas, whereas science is based on a desire to understand phenomena within delimited areas of experience. Technologists need good science, rather than science which seems to correspond in general shape and size to their own interests.

The Popperian view pushes back the frontiers of knowledge further than the Baconian, and therefore, in principle, increases the security of the theory-invariant results obtained in the hinterland. This is why Popperian science is good science and *a fortiori* more useful in technology than Baconian science.

If there is some plausibility in Cohen's thesis, it stems from the fact that the hinterland is not as well "held" as one would expect. But this is because the educational system is failing to produce the interpreters and developers of hinterland knowledge in sufficient quantity, and one can hardly blame Popper's view of science for this.

Yours faithfully,
CHRISTOPHER ORMELL,
Reading University

Sir Karl Popper

Methodology

Sir,—It is a pity that L. Jonathan Cohen should seek to perpetuate the widespread misapprehension that "Popperian science . . . cuts itself off from technological objectives, because its epistemology rejects inductive reasoning". The fact is that Popper has offered a non-inductive philosophy of practical action more realistic and responsible than any that Cohen tries to defend.

According to Cohen "we cannot do without some way of appraising the evidential justification for relying on a given scientific hypothesis. If we go up in a new kind of plane, or take a new kind of medicine, we want there to be adequate test-results to show that it is reasonably safe". Well, I am not going to deny the existence among the general public (and even among philosophers) of unsatisfiable (and, in the light of Hume's arguments, what one can only call irrational) desires. But I certainly do deny the wisdom of trying to satisfy such desires.

Cohen continues: "You would not wish to trust your life to a plane, or a medicine, which has been made in accordance with the boldest conjectures that have hitherto resisted falsification." But this doesn't begin to say what might be wrong with such planes and medicines (to which, incidentally, we consign our lives time and again). Nor does he explain why anyone might wish to entrust a life to a system of "inductive reasoning". As Hume justly remarked, such reasoning is "entirely precarious".

Popper's advice here is simple and straightforward: we should submit our practical proposals (and the theories on which they are based) to the severest criticism that we can organize, and we should avoid proposals (and also theories) that cannot withstand such criticism.

Yours,
DAVID MILLER,
Lecturer in philosophy,
University of Warwick.

Misapprehension

Sir,—In connexion with L. Jonathan Cohen's article I would like to make the observation that the essential achievement of Karl Popper is the application of logic to scientific method. As such, his results constitute a methodology rather than a philosophy.

The philosophical implications only appear to occur when his methods are applied to the arbitrarily extendable universe of discourse, which is generally regarded as the domain of science, and which may be seen as an integral part of the philosophy of science. Popper's methodology does not demand that this particular universe be adopted, and his methods are equally applicable to universes of discourse that are bounded in some way.

A delimited universe of discourse might, for example, be concerned with the general characteristics of airflow over a wing shape of certain type, or the behaviour of rock masses. In such cases, Popper's methodology directs us to the most universal and precise laws that the universe of discourse will allow, and which are naturally also the most reliable laws.

We may seek these laws empirically, or theoretically using a more fundamental law belonging to a larger universe of discourse that is already well corroborated. Falsification or corroboration may follow experimental observation, or logical deduction from a more fundamental level.

Yours faithfully,
JOHN P. WOODMAN,
24 Prior's Close,
Bingham,
Notts.

Peer review and the bureaucracy

Donald Michie seeks ways to overcome differing points of view between scientists and bureaucrats

Proposals for the reform of refereeing systems have recently been aired. A forgotten aspect is that "peer review", as far as research funding is concerned, is operated not by the scientific peers themselves but by the officials who look after the advisory committees of the grant-giving bodies.

Usually (but not necessarily) in consultation with the committee chairman, it is they who select the referees for a proposal. It is thus not possible to do justice to "peer review" without examining the relations prevailing between scientists and bureaucrats. If we can understand how the two worlds meet, or fail to meet, ways may suggest themselves for improving the process.

Last October's *Scientific American* had an article on the United States National Science Foundation's peer review system. An elaborate statistical survey, designed to pick up possible sources of bias (such as "eminent" applicants being favoured, or applicants from high-prestige universities) led to the conclusion that no important biases are present and that the workings of the system are pretty fair.

This should surprise no one. Anyone who has served on, say, a research council advisory committee can see for himself that in 95 per cent of the cases (perhaps more) assessments are made as objectively as one would wish to see. In the remaining few per cent, however, someone or something is involved to which the "office" is specifically sensitive. Then matters are handled (not necessarily on the surface) in a different way. Naturally these exceptional cases are swamped in the statistics.

A fairly senior official of a non-British agency, whose nationality I shall not disclose, once told me that if for any reason he felt *justified in short-circuiting the system in order to get a* given result, he would make a judicious selection of referees—either the scientists's particular friends or his particular enemies, according to which result he wanted. He needn't have told me. I knew it already. In his heart of hearts so does any scientist who has been in the game any length of time.

I do not myself think that anything much can be done to stop this. It is part of the human social condition in its possibly unedifying but very real Monkey Hill aspect. A grown person can reasonably be expected to cope. A scientist can face his critics down, he can ask to see referees' reports (by rightful entitlement in America), or he can follow up with a better drafted proposal. If he's convinced that he's not getting honest judgments he can force even ill-disposed or jealous scientific rivals into partial concession by technical confrontation. He can also, of course, and this is not absolutely unknown, locate the blocking colleagues and treat them to a little discreet stroking, trading and squaring. Admittedly in so doing he dips the flag of science to Monkey Hill.

Unfortunately, when thwarted in getting "the right answer" from peer review, officials do not always do what they should—disclose that because of additional, non-scientific, considerations the proposal has anyway to be rejected, or accepted, as the case may be. Being too bashful to do this (possibly someone higher up will be out of sorts if "the wrong answer" prevails) the office may press on earnestly into various finesses. At this juncture the scientific bystander may have to choose whether to look the other way, or to rock the boat.

The inhabitants of the two worlds inevitably and inescapably differ in what they respectively hold sacred. A scientist gives terrible offence if he tears a civil servant down as he would a seminar speaker who was glossing over something in his technical presentation. An official (but not a scientist) who is made to contradict himself publicly, or is confronted with an unexpected document, or is accused circumstantially of misjudgment, feels his personal sanctuary to be desecrated.

Yet the coin has two sides. The civil servant possesses little awareness of where lies the scientist's holy ground. The official is often needlessly scrupulous to avoid implying disparagement in the personal realm. Many a scientist does not care whether he is *personally* disparaged or not (scientific disparagement from his own peers would be different). Yet while being scrupulous where he need not be, the official may not think twice, if policy seems to demand it, about intruding his people-oriented methodolgy into issues of scientific truth and value.

Of course scientists need not feel any compulsion to accept the bureaucrat's view of science. But they should probably forgive those who do. Ibsen's play *Brand* offers a wonderful parable. The man of vision and principle, the village priest—how destructive and tiresome his vanity and single-mindedness proved to be for the villagers! The venal, pragmatic mayor, full of tricks and frailties, is the one in whom one recognises the power to conserve, heal and give aid when needed.

What can be done then to approximate North and South? One simple measure would be to require possession of a science PhD as a condition of employment as an officer of any scientific agency of Government. There is no way to soak up the ritual attitudes and moral lore of science except by working for several years as an organic part of a scientific laboratory, as every graduate student does

The reverse of course, is that after he has satisfied the university's examiners, the applicant for a higher degree should perhaps have his award deferred until he has spent a year working as a dogsbody in Whitehall and can supply a letter of commendation from those he has devilled for.

This simple scheme has another attraction. There is much concern about the overproduction of science PhDs and about their employability. On the new basis the market would be expanded to include a niche for graduate students ready to be coaxed from the laboratory into careers in science administration.

The author is professor of machine intelligence at the University of Edinburgh.

Seduction in libraries, or why researchers fall

Any research worker who uses libraries will recognize a seductive library when he sees one. It is the one with the power to attract regularly to itself researchers based in other institutions; the one that weighs heavily in a researcher's decision to settle at the institution it serves; and the one which even becomes itself an unofficial centre of study and research in fields for which its parent body has no administrative place.

Its seductive qualities lie, firstly, in its being able to give the researcher what he cannot find at home, and secondly, in being more or less widely known to have those resources available. (Some can, of course, enjoy false reputations for seductive appeal.)

National libraries might be expected to possess the quality of seductiveness in many, if not all, fields of study—to be seductive almost by definition, since they do not support the work of a single specific institution, and are often regarded as a source of last resort when other libraries have failed.

However, even in countries like the UK, where the British Library does attempt substantial coverage of the outside world's publications as well as exhaustive acquisition of indigenous book production, the most seductive collections in some fields are still found elsewhere. Nor should we forget that not everyone needs, or has access to, the most seductive collections in the country, and that many more libraries exercise regional or local seductive powers.

How is seductiveness (in a library) a quality to be fostered? It can, after all, be argued that a library collection which is demonstrated by heavy use to be offering an important or even unique contribution to the nation's research resources should be eligible for more support than its parent institution can povide, if this is necessary to maintain its standing. Indeed, the British Library already has limited funds at its disposal which are "directed to improving access to collections of national significance, where an alternative source of funding is not available".

By the same token, where a library is recognized as regionally or locally seductive in a particular field or fields, advantages could again be claimed for using limited resources to build on its existing strength rather than improving others' collections which might duplicate it or compete with it.

The less seductive would naturally protest that such a policy would simply encourage researchers to put greater pressure on the most outstanding—and therefore best-supported—research collections, while denying those libraries with fewer attractions adequate support to cater for even their own institutions' needs.

In fact, the question is the wrong one to pose. To ask whether, for a given area of research, more should be spent on making an outstanding library better or on bringing others rather nearer to the highest standards, is to realize it is a choice which is hardly ever presented. Decisions affecting research library development are usually made in terms of planning and organizing research in academic departments, research centres or entire universities, while library provision is expected to follow on.

The consequence is, at the very least, a delay in building up adequate collections in the "home" library to support the research, and at worst a proliferation of research and teaching centres in the same field, most of which can never look forward to adequate library support.

In a survey of British researchers in Slavonic and East European studies made in 1975, nearly threequarters of the respondents claimed that their own institution's library met half or less of their requirements for research material. In such circumstances, the seductive library needs few charms to attract the researcher away from home.

Obviously it would be nonsensical to proceed from this to assert that research must be "resource-led", even in fields which are traditionally founded on the study of the printed word. Equally obviously, very few libraries can ever make their parent institutions totally self-sufficient in research resources. But a willingness to accord greater weight to existing resources' quality and location, in planning research in the humanities and social sciences, might well help to avoid needless outlay in rearing new research collections from scratch, in expensive inter-library loan traffic, and in seduced researchers' travelling expenses.

Research planning cannot be expected to take account of existing resources in this way until the resources themselves not only have their existence recorded, but have also been adequately described and evaluated in resource guides and directories. Some such guides already exist, but most of them lack the depth of characterization which institutions or even individuals need in order to assess a collection's usefulness for their work, and many subject areas are still not equipped with any kind of guide to resources.

A better-coordinated and more comprehensive approach to the availability of research resources would be a fruitful area for cooperation between library staff, specialist academic associations, the research councils, and other bodies. The standards and techniques for describing and evaluating library resources in general for this purpose also deserve closer study.

A library's seductive qualities, when recognized in a resource evaluation of this kind, may be a useful pointer to the quality and location of collections in the field in which it seduces. However, if these resources *are* fully recorded, may we hope that changes in the planning and emphasis of research will when appropriate be made to take account of them, and that this in turn will reduce some libraries' seductive attractions as the researcher finds greater fulfilment in his home institution's library?

Gregory Walker

The author is head of the Slavonic Section, Bodleian Library, Oxford.

Wrong, wrong, wrong

Guido Almansi reviews the Royal Shakespeare Company's new production of *Measure for Measure*

After the intellectual vacuum of the recent *Tempest* at Stratford, in which the islanders were transported into a greyish sub-polar world, even the miscast *Measure for Measure* directed by Barry Kyle is a welcome change. The production bristles with ideas, but not a single one seems to work properly.

Measure for Measure is a comedy of psychological errors. Errors are in this case mistaken personalities, not mistaken identities. The common denominator of all the characters is that they do not know each other and do not understand themselves.

Angelo is unaware of his dark impulses just as the Duke is of his own "dark corners", and Isabella of the obscure motivations for her behaviour (does she obtain at the end what she really wanted, a fertile and successful marriage rather than a barren conventual life?).

Human attitudes and actions in this play are not only *horrible* and *disgusting*, as Coleridge saw, but above all unknowable, mysterious, *dark*. Both the Duke and the other protagonists are devious because of a fracture between emotion and intelligence rather than between morality and moral behaviour. Isabella's *sense* [illegible] is a different *sense* from Angelo ("'tis such sense/that my sense breeds with it"); her question about Angelo's *pleasure* arouses a different *pleasure*.

Thus the boundaries between feelings and ideas, the physical and the mental world, are threatened. The characters in *Measure for Measure* are schizophrenic in their attitudes towards themselves, misguided in their attitudes towards each other. There is an interplay of continuous equivocation. The Duke misjudges Angelo; Angelo is a master in self-deceit; Isabella is monstrously wrong about Claudio ("had he twenty heads to tender down/on twenty bloody blocks, he'd yield them up/before his sister should her body stoop . . ."); Claudio does not understand what's happening to him or to others. Everyone is wrong and acts wrongly, except Pompey who knows himself both as a bawd and as a would-be executioner.

The play's atmosphere is misty with incomprehension and characters are therefore, hesitant. No one acts in a determinate way. Everyone blunders into action, either by being forced to do something, as when Isabella is urged by Lucio to persevere with her pleading; or by a miscalculation, for instance after the Duke's vain forecast of Claudio's pardon.

The Stratford production exploits this confusion of intentions and deliberations. Hesitation is the rule of the day. In the first scene the Duke writhes on his ducal seat in the agony of having to make a decision. Throughout the play he seems to have [illegible] is "not inclined" towards women, but neither does he seem to be inclined towards plots and intrigues, which are his chief occupations.

Also the Angelo of Jonathan Price is an *honest* figure. In fact he is the most honest, repentant and guilt-ridden villain who ever walked across an English stage. He does not utter his lines but stammers in embarrassed hesitation. He does not walk but timidly advances his feet in little steps. He crawls along the walls; kneels in self-disgust; nervously rubs his knees, touches his neck; withdraws his arms into the slender carapace of his thin body, like a prawn, at the very moment when he proposes the bold terms of the blackmail to Isabella.

Even when he gives rein to his sensual race the tone of his voice betrays a pusillanimous human being. He cringes in shame when Isabella comes to know his "pleasure". His snake-like movements do not suggest the insinuating behaviour of a Machiavellian criminal but the pangs of a guilty man who suffers in his bowels.

It is a curious interpretation, rich in possible developments, which however sacrifices the dignity of the character, the icy rigour of his moral statements. Jonathan Price's is a study in weakness where nothing is left of the harsh world from which Angelo's Puritan morality emerges: a world which continues to follow its own laws even when the moral premises for moral decisions have ceased.

The author is professor of English and comparative literature at the University of East Anglia.

Paola Dionisotti as Isabella, and Michael Pennington as the Duke.

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Thinking about experience in public

The Life of the Mind Volume 1: Thinking; Volume 2: Willing
by Hannah Arendt
Secker and Warburg, £12.95
ISBN 0 436 01751 2

Hannah Arendt: "She was never a conventional academic philosopher or political scientist."

Shortly after Hannah Arendt's death on December 4th, 1975, Mary McCarthy's obituary of her, *Saying Goodbye to Hannah*, appeared in the *New York Review of Books*. In this vivid and affectionate article she described how her friend would on occasion be seized by the impulse to think, and would lie motionless on the sofa with her eyes closed, oblivious of company, like Socrates absorbed in his reflections in the market place.

This glimpse of the outward aspect of her mental activity is fascinating because Arendt's claim to fame is that she did think about things, reflecting upon her experience and upon the events she witnessed with unusual freshness and tenacity. She was never a conventional academic philosopher or political scientist. Her preoccupations were not those of any ordinary academic discipline, and her works often outraged scholars into whose specialisms she rashly ventured. Not that she was unscholarly—on the contrary, her learning was impressive—but the sheer scale of her reflections, the connexions she made and the generalizations she tossed off made her work extremely vulnerable. Any bright graduate student could do a hatchet job on *The Origins of Totalitarianism* or *The Human Condition* or *On Revolution*, and her most devoted readers must sometimes have felt that she seemed to practise a version of the White Queen's mental discipline, writing six indefensible things before breakfast.

The puzzle she set her admirers, indeed, was to explain just why they seized so eagerly upon everything she wrote. For the answer did not lie, ultimately, in the validity of any of the particular theories that she propounded. Rather, it lay in the enormously stimulating experience, communicated by her writings, of a remarkably original, profound and learned mind trying to make sense of whatever confronted it, be it totalitarianism or the American revolutionary tradition, the trial of Eichmann or the confrontation at Little Rock—or any of the other things that set her thoughts to work. As Mary McCarthy said in her article: "thought, for her, was a kind of husbandry, a humanizing of the wilderness of experience".

In one of her most original and fascinating pieces, an article on "Thinking and Moral Considerations" published in 1971 in *Social Research*, Arendt turned her thinking upon the process of thought itself, and reflected upon this curious human impulse to make sense of experience, "to think beyond the limitations of knowledge". For thinking must, she said, be distinguished from cognition, the much more practical and down-to-earth quest for solid knowledge. As the history of technology and science shows, the desire for knowledge can be satisfied. Men can find things out, correct their mistakes and painstakingly accumulate and pass on to one another a store of reliable information. Thinking, the quest for meaning, is quite another matter. It is the attempt to make sense of one's experience, to place events, actions and judgments in a context that will make them less baffling: and, as she pointed out, such thinking does not bring any permanent results. Its insights cannot be checked and validated like those of an empirical scientist.

There is a peculiar, Ozymandias-like pathos about the vast philosophical structures built by past thinkers in a futile attempt to give validity and permanence to the insights won in their personal quest for meaning. For to try to freeze thought into a philosophical system was, said Arendt, an inherently contradictory enterprise. Even within the mental life of any one particular person, the thinker (if he is not to cease to think) must constantly be prompted by new experience to revise or overturn the insights he has already reached, so that thinking is like Penelope's web, never finished, weaving patterns of meaning that must be constantly reestablished. It struck her as particularly significant that Socrates, that quintessential thinker, questioned everything, taught no doctrines, and did not leave a system behind him.

Thinking, then, in this sense of the ever-renewed quest for meaning, seemed to Arendt both inescapably human, and at the same time futile in the sense that it showed no results. It seemed to her that the inflated claims made throughout history for the truth of philosophical systems were so many attempts to provide a justification for this puzzling business of thinking, by pretending that it could deliver true knowledge—whereas, in fact, the urge to seek meaning in life, insistent though it is, provides no such solid and obvious benefits.

She did suggest tentatively though, that there was perhaps one respect in which the habit of reflection might be useful—or, at least, where its absence might be harmful. When attending the trial of Eichmann in Jerusalem she was struck by what she called the "banality" of Eichmann's capacity for evil. He seemed to have gone through his task of rounding up Jews and transporting them to their deaths in a kind of bureaucratic trance, not once thinking about what he was doing, never for a moment questioning his conventional clichés about doing one's job and rising in one's profession. Reflecting upon this spectacle led Arendt to suggest that although thinking may sometimes seem morally dangerous (where, like Socrates or Nietzsche, a thinker stimulates his hearers into throwing away their conventional moral codes) there is an opposite danger that follows from thoughtlessness, particularly in critical and unprecedented circumstances. In a situation like Nazi Germany, where conventional virtues like loyalty, efficiency and obedience become the tools of monstrous evil, the habit of reflecting upon one's experience and of feeling obliged to justify one's actions, not just to the neighbours, but to oneself, may be not an idle luxury but a moral necessity.

Considerations of this kind were by Arendt's own account the immediate impulse behind her study of what is involved in thought, although she had of course been thinking, and reflecting upon thinking, all her life. The final stimulus to write *The Life of the Mind* came when she was invited to deliver the Gifford Lectures at Aberdeen. She planned the lectures in three sections (after Kant, for whom she had profound admiration) to be concerned with thinking, willing and judging. The first set of lectures was delivered in the spring of 1973, but her series on willing was interrupted by a heart attack after one lecture. Although she was able to finish writing the first two parts before her death, nothing remained of her reflections on judging—only a sheet of paper found in her typewriter after her death, blank save for the title. The manuscripts have been edited with painstaking care by Mary McCarthy to produce a two-volume work, *Thinking* and *Willing*.

At the beginning of the book, Arendt apologized for what might seem presumption in her choice of subject, saying, "I have neither claim nor ambition to be a 'philosopher' or be numbered among what Kant, not without irony, called ... professional thinkers". It is important not to be misled by this disclaimer: there is nothing amateurish about Arendt's reflections, and the reader cannot fail to be struck by the depth and extent of her learning, which ranges easily from the Greeks via Cicero and Augustine, Aquinas and Scotus, to Kant, Idealism, and her own predecessors, Heidegger and Jaspers. The sense in which she was not a professional philosopher, however, was that she was not primarily interested in contributing to a professional academic debate on recognized philosophical problems. Rather, she was concerned, as one who had always been impelled to think about her experience, to reflect upon this mental life itself, and in particular upon what previous philosophers had revealed about theirs. In other words, her interest in the many philosophers to whom she refers is less in their theories and the logical flaws to be found in them than in the experiences they reveal. She suggests, indeed, that one great advantage of the modern loss of faith in metaphysics is that instead of looking at past philosophical systems in order to dispute their truth or falsehood, we can instead treat them as "the only clues we have to what thinking means to those who engage in it".

It is in this phenomenological spirit that she embarks upon her investigation of the life of the mind, of our curious ability to withdraw from the world into a region of thought, there to seek, not truth, but meaning. However baffling this mental activity may be, it does not seem to her particularly esoteric:

> All the metaphysical questions that philosophy took as its special topics arise out of ordinary common-sense experiences; "reason's need"—the quest for meaning that prompts men to ask them—is in no way different from men's need to tell the story of some happening they witnessed.

One can perhaps convey something of the flavour of Arendt's discussion of thinking: summary would be very difficult, for her exploration is leisurely and discursive, taking in fascinating reflections upon, for instance, appearance and semblance, language and metaphor, or our experience of time. The second volume, on the Will and the problem of its freedom, is organized more chronologically, tracing the experience of internal freedom and unfreedom recorded in the reflections of philosophers from the Greeks onwards. Arendt explains that she adopted this method because she felt there had been a real change in the content of mental experience in the course of recorded history:

> The faculty of the Will was unknown to Greek antiquity and was discovered as a result of experiences about which we hear next to nothing before the first century of the Christian era.

This volume is therefore much more of a reflective history of philosophical speculation on a particular topic than is the first. Arendt is particularly interesting on Duns Scotus, a little-read philosopher with whom she feels great sympathy, probably because she finds in him a precursor of her own emphases (so marked in *The Human Condition*) on the value of particular individuals rather than categories of persons; on the capacity of men to act in unpredictable ways, and on the blessed contingency of human affairs.

True to her initial undertaking Arendt does not present a theory in *The Life of the Mind*. What she does, as she has so often done before, is to think in public about certain matters—to lay bare her own process of reflection so that others who also live the life of the mind may be interested and stimulated by it, may gain insights—or may, if they wish, disagree.

Those of us who have over the years gained so much from having her thoughts laid before us in this way may be a little disappointed by this final work, partly through expecting, unrealistically, that in it all the previous loose ends would at last be tied together. Perhaps because it was written as lectures the book seems more dilute, less dense in content than many of her previous works: while some of the most interesting reflections it contains, such as those on Socrates, had been substantially published previously.

These are minor cavils, though. Her mind was too fully alive, to the very last, for its reflections to be other than interesting and stimulating.

Margaret Canovan

Exploring the mind-body problem

Physicalism
by K. V. Wilkes
Routledge & Kegan Paul, £4.75
ISBN 0 7100 8805 1

The mind-body problem plagues many people besides professional philosophers. The philosophical prophylaxis for this common plague, Dr Wilkes argues, is a return to the Aristotelian notion of a person, aided by the specific antibodies of twentieth-century scientific functionalism.

For Aristotle, she says, the problem simply did not exist, since he had no ontological commitment to "mind" as a separate entity or realm of processes whose relation to the non-psychological "body" might be problematic. Similarly, current scientific work in psychology and neurophysiology explains [illegible] phenomena in terms of a hierarchy of functions, which are embodied in but not ontologically distinct from the living organism. Computer analogies are especially fruitful in providing examples of hierarchical, functional explanations of performance with no metaphysical mystery about the "relation" between the information-processing hardware and the information processes it carries out.

It was Descartes who initiated the problem, by introducing a conceptual separation between mind and body that could not be coherently bridged. But he did this for essentially epistemological (as opposed to scientific explanatory) reasons, in his search for absolute and incorrigible knowledge that would escape any sceptical doubt. With our current fallibilist acceptance that this epistemological aim is radically misconceived, we need no longer follow Descartes in his misleading attempts to distinguish a purely mental realm, incorrigibly accessible to the individual mind alone, in which sentience and sapience alike are to be found.

The basic feature of sapience, Wilkes claims, is intentionality. This has often been regarded as a stumbling-block for physicalism, but she argues that it is accessible to the information-processing accounts typical of present-day functionalism. Sentience also, she says, can be included within such a viewpoint.

For once we have applied many of the ordinary predicates of sapience to a living creature, we are bound to apply predicates like "conscious" as well. There is no cut-off point at which the vocabulary of consciousness suddenly becomes inapplicable, because there is an extensive network of psychological terms (believe, remember, infer, see, want, reason) that together imply the generic term "consciousness", and each of these in turn is a matter of degree. We cannot dispense with these terms in our scientific explanations of behaviour, for what is being marked by them is the creature's observed capacity to choose between different potentially appropriate responses to a wide variety of circumstances. This capacity requires a high degree of neurophysiological complexity. And neurophysiology itself follows (and must follow) functionalist insights stated in psychological terms in deciding what sorts of physiological mechanism to reach for in explaining the organism's behaviour.

Wilkes points out that research "proceeds apace" along the lines of identifying the varied information processing concepts needed to characterize mental complexity (page 108). Her pertinent remarks might have been strengthened by more specific reference to recent work in cognitive psychology that takes computational concepts seriously. And her claim that "it is already apparent that computer simulation is not heuristically valuable as a research tool in any detailed study of the processes of memory storage" (page 82) can be accepted *only* if one interprets "details" at such a fine level that they are taken to be physiologically specifiable neuronal events.

All in all, this is a clearly-argued and persuasive account of the philosophical core of current scientific functionalism. Wilkes is to be commended for her insistence that we ask our philosophical questions about mind and body with an eye to the prerequisites for a fruitful scientific theory. If we then conclude with her that the mind-body problem is a pseudo-problem, we are less likely to feel cheated than if this conclusion derives from examination of ordinary language alone. It is Descartes who must be plagued by these matters, not us: we can justifiably cry, "A pox upon your problem, Sir!"

Margaret Boden

Getting up steam

The Railway in England and Wales, 1830-1914
Volume 1: The System and its Working
by Jack Simmons
Leicester University Press, £12.00
ISBN 0 7185 1146 8

Seventeen years ago Professor Simmons provided in his *Railways of Britain* what has come to be regarded as a classic introduction to the subject. We now have the first part of a detailed and wide-ranging survey of the impact of the railway on the economy and society of nineteenth-century England and Wales.

This preliminary volume is limited to an account of how the network grew and services evolved, followed by an examination of the development of the permanent way, locomotives and rolling stock, brakes and signalling, and management techniques. Some useful comparisons are made between the British experience and that of countries overseas. The volume's function as a prologue is indicated by the frequent references to the fuller discussion of particular topics that is to follow, for instance the evolution of railway stations and hotels, the reasons for the continued construction of rural branches in the later nineteenth century, and the relationship between the railways and suburban growth.

Although the theme of increasing state intervention runs through this volume, its treatment is fuller for the earlier part of the period. The role of Parliament in preventing main line extensions into central London during the 1840s, provisions for the collection of operating statistics, the withholding of approval for proposed amalgamations, and the importance of the Railway Inspectorate in improving standards of safety are discussed, but not the 1883 Cheap Trains Act or the establishment of the Railway and Canal Commission and the subsequent regulation of freight rates. Nor is there any account in this volume of the development of trade unionism and of government intervention in railway labour relations. For an introductory economic history of the railways the reader will need to refer also to the survey by Harold Pollins or the general accounts of British transport history by Dyos and Aldcroft or Philip Bagwell.

Simmons emphasizes the need for his text to be read in conjunction with the accompanying two maps. That of England and Wales, based on original research, shows the extent of the network at four significant dates. Although useful, it is not in itself sufficient to illustrate the account of railway construction and amalgamation in particular regions, for which separate maps showing the various companies would have been helpful. Perhaps these are to be provided in the next volume. The map of the London system in 1914 is little more than a sketch, and could readily have included more detail to illustrate the chapter devoted to the capital. Not all readers will have immediate access to a good railway atlas or to the maps in other publications to which reference is made.

It is to be hoped that the bibliography this volume lacks, which was a valuable feature of the author's earlier essay, will be provided at the conclusion of the work. Readers of the first instalment will look forward to the three forthcoming volumes; the next will consider the impact of the railway on individual communities.

Michael Jahn

A Catholic reign

***James II: a study* in kingship**
by John Miller
***Wayland*, £12.50**
ISBN 0 85340 058 X

Despite recent changes to the backcloth, James II still stands out from Macaulay's canvas as a cruel king who wanted to be feared abroad and absolute at home. Where Macaulay presented a caricature, John Miller attempts a full portrait of James from material in English and continental archives.

In many respects, during Charles II's reign James promised more as king than his elder brother. In exile and as heir to the throne he had proved a good soldier and successful admiral. Though his conversion to Catholicism in 1669 had been a cause of great trouble to Charles, by 1685 James's recent behaviour and policy in Scotland had placated Tory fears about his succession. When he came to the throne in 1685 he sensibly resisted any proposals to oust former exclusionists. James proved a diligent monarch who embarked upon a reform of court and administration in an attempt to prevent peculation and the sale of office. James's first parliament opened successfully, with the Commons voting a generous grant of supply in response to the new king's promise to protect the established church. All augured well. Yet by November, parliament was prorogued (never to meet again during his reign) and James broke with the Tories to embark upon the extreme Catholic policies which led to his downfall. How had the situation changed so drastically and so rapidly?

In October 1685, Louis XIV revoked the edict of Nantes and began to persecute the Huguenots, many of whom fled to England. Fears for the safety of Protestantism in England were evoked by James's close friendship with France, by the recent expansions of the army (after Monmouth's rebellion) and by the appointment of Catholic officers. James was undoubtedly critical of Louis's actions, and offered refuge to Huguenot émigrés who were prepared to conform to the Anglican liturgy. In short he still pursued a policy of alliance with the High Anglican Tories. But James's actions did little to alleviate the panic, and attacks on Catholics at court and in the army brought the final session of parliament to a close after only two weeks. Rumour weighed more than reality.

This failure to understand the fears of his subjects was at the heart of James's tragedy. He never appreciated that fears of a popish plot (though often irrational) were central in English political attitudes. Unfortunately after 1685 he was badly advised as well as personally naive. For when James prorogued his only parliament, Sunderland (anticipating the king's prejudices) skilfully used Catholic support in order to break his rival Rochester. Sunderland erected an exclusively Catholic privy council. Moderate courses advocated by Rochester were replaced by the policies of extremists and a purge of all who dissented from them. As all but Catholics were pushed out of court, James lost contact with the powerful men in the country. As his policies met with increasing resistance he seemed genuinely surprised that the Tories did not come round, and that the Dissenters did not support him. Politically more adroit than James, Sunderland began to see his errors, but was trapped by his own designs. Only in 1688 did he advise James once again to court the Tories. By then, perhaps, it was too late.

Miller shows clearly that James never intended the Catholic absolutism feared by his subjects. While he hoped to repeal the penal laws and Test Acts, he never expected to establish Catholicism as the dominant (let alone the only) religion in the realm. His foreign policy was directed more by a desire for peace than by any desire to be master of a Catholic Europe or a tyrant at home. Yet if James's subjects failed to understand him, he never took account of their fear and suspicions. What was needed was a well-functioning privy council and parliament which could facilitate communication between crown and locality. Instead James was advised by men who isolated him from his subjects.

After the events of 1688 one of the old Anglicans at the court of Louis XIV remarked apropos of a plan for James's reestablishment: "He may reign a Catholic in devotion, but he must reign a Protestant in government". It was advice that should have been given sooner.

Kevin Sharpe

Diaries of a public man

The Gladstone Diaries
Volume V: 1855-1860
Volume VI: 1861-1868
edited by H. C. G. Matthew
Clarendon Press: Oxford University Press, £40.00 (set of two volumes)
ISBN 0 19 822445 1

Keeping a diary was for Gladstone one of many means of self-discipline. By recording in telegraphic style the fixed points of his daily life, people encountered, places visited, letters written, books read, he had found yet another way of imposing order on his volcanic energies.

Those familiar with the previous four volumes of *The Gladstone Diaries* would not expect these two volumes to be more than incidentally revealing of the author's state of mind, nor to contain more than occasionally incandescent passages of emotion. In fact self-revelation and emotion are rarer in these years of Gladstone's middle life than earlier on. He is now an established major political figure; equally his family and private life moves in well regulated patterns. Public and private crises do not produce the inner tensions which were reflected in the earlier part of the diary and to this extent these two volumes leave a sense of anti-climax.

On the political side there is nothing here likely to cause fundamental change in the interpretation of Gladsone's role. Great turning points in his career, like the decision to take office under Palmerston in 1859, leave little trace in the diary: "Went to Ld P by his desire at night; & accepted my old office", is all he has to say about it. Perhaps he could hardly admit to himself that it was above all the instinct for political survival that prompted this crucial step. The editor, Dr Colin Matthew, has, as in previous volumes, printed a selection of Gladstone's memoranda to supplement the diary and more political reflection emerges from these than from the daily entries. Much of this material has been published elsewhere, but there are two particularly interesting memoranda from which Morley does not quote. One, written in February 1856, sketches a programme of financial measures most of which Gladstone implemented during his long tenure of the Treasury between 1859 and 1866. Matthew, in his admirable introduction, rightly sees this remarkable piece of financial planning as an example of Gladstone's executive turn of mind, which made his prolonged exclusion from office after 1855 particularly hard to bear. Another memorandum not previously printed records a conversation with the Queen in March 1862, not long after the Prince Consort's death. Gladstone was still *persona grata* at court, but he was conscious of constraint and uneasiness in his relations with the Queen: ". . . my coming visit to Windsor which troubles my spirit . . . I am ill fitted for these things". Yet he writes movingly of the Queen in her time of sorrow: "She struggled not to give way while she spoke the artless appeal but as she spoke it she seemed the most womanly of all the women in her dominions. The splendour & the majesty were as though they were not."

Apart from the memoranda there are revealing political asides in the diary itself. After leaving Palmerston's government in 1855 Gladstone clearly did not expect this uncongenial Prime Minister to establish so prolonged a political dominance. The future of the Peelite group, on the basis of which he had held office under Aberdeen, became a growing anxiety. "A bad night for Peelism", he writes in February 1857 when two of his principal Peelite colleagues, Graham and Cardwell, voted for electoral reform and he and Sidney Herbert went into the opposite lobby. Dining with Herbert and Graham after the shock of Palmerston's great electoral triumph in the spring of that year he comments: ". . . as if Peelism were not dead." All but bereft of parliamentary support Gladstone was yet so formidable a figure that both major parties continued to woo him. When he finally swallowed his dislike for Palmerston sufficiently to rejoin him in 1859 he remained a Liberal-Conservative Peelite, in the Liberal Party but not of it. As his old Peelite colleagues disappear from the scene the diary bears witness to his isolated political position. This is more than counterbalanced by his great record of legislative and administrative achievement and his growing rapport with the great constituency out of doors. In June 1861 Lady Waldegrave tells him of Whig fears: ". . . first that all, then that most, of my Colleagues in the Cabinet predicted that I should lead the Bright party."

During these years his family was for Gladstone a quiet backcloth to a ceaselessly active life, not a preoccupation rivalling affairs of state. The calm is briefly broken by tragedy, as with the death of sister-in-law Mary Lyttelton after the birth of her twelfth child. Gladstone's wife Catherine remained for him a "hero-woman", but a rather distant one. Friendships with women like the Duchess of Sutherland, Lady Waldegrave and Laura Thistlethwayte were important, not surprisingly, for though Gladstone's working life was passed in an intensely male world he lacked an entourage of male confidants. We are promised a stormy episode in his relations with Mrs Thistlethwayte, a former *demi-mondaine*, in the next volume. The rescue work went on, mostly routine, occasionally more preoccupying, as with Miss Summerhayes, a beautiful artist's model and courtesan. Gladstone arranged for her to be painted as "Lady with the Coronet of Jasmine".

The editor has again done his work thoroughly and his introduction to these, as to the previous two volumes, is essential reading for anyone with an interest in Gladstone. The diaries are, except for a few nuggets, the concern of the specialist.

E. J. Feuchtwanger

The dust of archives

Catholicism and History: the opening of the Vatican archives
by Owen Chadwick
Cambridge University Press, £5.90
ISBN 0 521 21708 3

In 1810 Napoleon removed the archives of the papacy from Rome to Paris, as part of an attempt to deprive competitors and the European public in general of their history. This swaggering anticipation of the regime of Orwell's Big Brother, emulated so far as I know by no European government since, even Hitler's, is the starting point of Owen Chadwick's *Catholicism and History*.

Based on a set of Herbert Hensley Henson lectures given in Oxford in 1976, the book pursues down to 1921 the history of the opening to scholars of the Vatican archives. It is a smallish product of the Chadwick workshop, and shows one or two signs of haste in its preparation. Although his introduction draws attention to the general implications of the theme of conflict between the aims of historical scholars and those of governments and places the nineteenth-century papacy's resistance to documentary inquiry in a context of the behaviour of contemporary secular governments, the book does not rise much above the anecdotal in character. But perhaps the Vatican is a territory in which anecdote is of the essence, and the stories are good ones.

Formally, the lectures were constructed around a series of historical questions which popes had some reason to feel sensitive about—the trial of Galileo, the proceedings of the Council of Trent, the private life of Pope Alexander VI—and show after what ins and outs the authentic documentary record of these matters was finally made public. They give due weight to the intervention of Pope Leo XIII in 1883, motivated in his decisive act of archival generosity not by a disinterested concern for historical truth but by a feeling that in the existing intellectual climate of Europe almost any actual facts about the history of the papacy were bound to make people think better of it than they did. More immediately, he was moved by naive astonishment at the objectivity of the German Protestant historian Theodore von Sickel in proving that the *Privilegium Ottonis*, a document whereby a tenth-century German emperor granted extensive possessions in Italy to the Roman see and helped to provide the recently-abolished Papal States with a legal pedigree, was not, as all serious people had supposed, a forgery of the type of the Donation of Constantine, but perfectly genuine. Naive he may have been, but by comparison with Napoleon he seems an angel of light.

Chadwick will probably not be displeased if what people remember from his book is the idiosyncrasies of a number of characters who appear in it: the German Oratorian Augustin Theiner, nervously poised over the fulcrum of a see-saw between creative scholarship and Catholic propaganda; the modest English priest Joseph Stevenson who was able, while the archives were still officially closed, to begin accumulating the now substantial volume of transcripts of papal documents concerning England which for the past century has been one of the attractions of the Public Record Office; the less modest Acton, bringing to nineteenth-century Rome the cheerfully irreverent instincts of eighteenth-century English Catholic tradition; Ludwig von Pastor, condemned to some sort of impartiality by the unthinkable mass of documentation progressively revealed to him and shovelled into his *History of the Popes*.

In making attractive use of the knowledge on the subject which has been accumulating in recent years from German and Italian sources, and adding to it by his own documentary investigations in England and Rome, Chadwick has been following appropriately in the steps of two of his predecessors in the regius chair of history in Cambridge, Acton and Herbert Butterfield. He concludes with Acton's sad reflection on the consequences of the liberality he had done a good deal to encourage: "The dust of archives blots out ideas". Perhaps it does; but the study of human attitudes to archives, even in so comparatively unexacting a form as this, inspires them.

John Bossy

D.H. LAWRENCE

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BOOKS

Common identity

Ethos and Identity: three studies in ethnicity
by A. L. Epstein
Tavistock Publications, £6.95 and £2.95
ISBN 0 422 76360 8 and 76370 5

The fact that much of life is puzzling, unpredictable and, so it sometimes seems, distressingly complicated, may account for the attraction of social science.

We may be drawn to read, study or even "profess" it because it promises to introduce order and *predictability* where there appear to be *neither*. But one of the marks of the mature *social observer* is his reconciliation to the disorderliness of the real world and thus to the very narrow limits of what social science can achieve. Once this is realized, the best sociologists and anthropologists can become sensitive observers of particular situations, able to give accounts with rich detail, while satisfying themselves as "scientists" by drawing their materials together with just that amount of abstraction, comparison and analysis that the subject will bear.

A. L. Epstein in his *Ethos and Identity: three studies in ethnicity* has achieved a very pleasing balance between his application of social scientific theory and concepts and his detailed accounting of social economic and political life in Zambia, Papua-New Guinea and among Jewish people in the United States. His experience as a social anthropological observer spreads over two decades and this book draws on a long catalogue of fieldwork and writing.

The connecting thread is the notion of ethnicity which, when I read it in the subtitle, caused me some apprehension because of the manner in which many recent writers have reified this concept. Happy, then, to report that Epstein is the last man to conceive of ethnicity as a thing to be explained, or as some "perplexing phenomenon of the modern world". Rather he decomposes ethnicity into those series of social ties, bases of political organization, and forms of social and personal identity (which in the current vogue are said to constitute ethnicity) and, treating them as such, makes these social facts more familiar and understandable.

There are no primordial ethnic identities. Rather, varying forms of social identities and ties are seized upon, accentuated, dissolved, and revived as circumstances dictate. Epstein is much attracted to the "situational approach", perhaps too grandiose a term for the simple idea that there are times when being (say) "Jewish" is important and other times when it is not. But at least he takes seriously the consequences of this straightforward insight and goes to the very considerable trouble of explaining the circumstances under which "tribal" loyalties in Zambia persist in the town, village and regional loyalties in Papua-New Guinea prosper and fade, and how Jewish identity and ties are negotiated in American social life.

Another simple distinction which he turns to good account is that between subjective and objective ethnicity. That is to say he points out that one may observe regularities of personal identification (the psychological sense of being a such and such) and regularities of social interaction (the social networks of people of shared descent). Simple enough, maybe, but where other writers would have made a thoroughly unpalatable and long meal of this, Epstein is content to suggest it and then let his historical accounts do the rest.

There are times, however, when he appears to be addressing his question in a mistaken way, albeit a mistake which is fashionable in sociology. He seems to ask himself "why does ethnicity persist in a world which, by all the canons of sociological analysis, progressively contributes to the dissolving of the significance of ties of blood, region, or tribe?" Such an approach is mistaken to the extent that it presents ethnicity as a new phenomenon, an astonishing emergence or reemergence of local, national and other loyalties.

But the real drift of Epstein's book is to demonstrate just how we are not seeing the emergence of some dramatic new phenomenon—ethnicity—but rather catching sight of some changing contexts of familiar political and social loyalties. In his hands tribalism in Africa is much less puzzling; rather than presenting it as a mysterious persistence or explaining it through some psychological reduction to a need for identity, he shows how in Zambian towns there were and are circumstances in which village, regional or tribal loyalties continue to function in social, economic and political transactions. And he does this without reifying tribalism, without leaving us with the impression of a mysterious primordial force.

Readers will also find that this book is an interesting source on political development towards the independence of colonized countries, on the social meaning of the military in the life of African peoples, on national identity among colonized peoples; and in the third case they will find an interesting discussion of a wide range of literature on "Jewishness" in the United States.

Given the aims of the author this book comes very close to being just as simple and just as complicated, just as detailed and just as generalizing, just as discursive and just as demanding, as most readers would wish.

C. S. Fenton

This drawing by Picasso, showing himself seated in the left foreground, is of Els Quatre Gats, a Barcelona café which was a meeting place for artists and writers between 1897 and 1903 and which housed Picasso's first exhibition in 1900. The drawing is reproduced in Marilyn McCully's Els Quatre Gats (Princeton University Press, £16.80 and £7.10), an illustrated account of the cultural milieu of Barcelona around 1900.

Oxbridge for Muslims

Aligarh's First Generation: Muslim solidarity in British India
by David Lelyveld
Princeton University Press, £16.80
ISBN 0 691 03112 6

The cultured Muslim young man trying to come to grips with British domination is a well-known figure to historians of India, not least because of the caricature of the type presented as Aziz in *A Passage to India*. In this study of the first 25 years of Aligarh College, Dr Lelyveld sets out to examine the reactions of the North Indian Muslim elite to the changing intellectual, cultural and political climate which British rule had wrought by the end of the nineteenth century.

Under the rule of the Mughuls and their successors in North India, including the East India Company, the basis of the life of the established Muslim elite was the pursuit of the attributes of a cultured existence bound up with religion that stood them in good stead in obtaining service employment in the law and administration. The administrative and educational reforms of the 1860s and 1870s, however, which emphasized competitive examinations and formal educational qualifications, blocked this charmed path to advancement. By the 1870s it seemed that real power in India was passing to the "heaven-born" British administrators aided and abetted by Hindu, often Bengali, subordinates adept at passing examinations but lacking in culture, character, or previous status. It was to remedy this situation that in 1875 a number of Muslim public men led by Sayyid Armad Khan founded the Muhammadan Anglo-Oriental College at Aligarh.

The purpose of the Aligarh College was to bring the benefits of a British public school and Oxbridge education to young Muslim boys from respectable homes. English professors, many of them fresh from Cambridge, were brought out to India and a collegiate atmosphere was created by debating societies, halls of residence, organized games and emphasis on brotherhood and good fellowship. The curriculum was weighted towards the European humanist tradition, the bulk of the teaching was in English and prayers were compulsory even on the cricket ground (although they were Islamic not Christian ones). The aim of the founders was to instil a modern sense of Muslim nationhood that, while loyal to British rule, would recognize those ties of religion, culture and origin that, in the final analysis, drew the new families, sects and regional groups together and set them apart from Englishmen or Hindus.

The college was a success but the results were not quite what the founders intended. Although the Aligarh graduates obtained jobs in government service or the legal profession, and retained a wide network of contacts made in their student days, the academic standard of the college was disappointing. Worse still, its hothouse atmosphere bred rivalry and intrigue as well as comradeship, leading to factional battles, student revolts and personal antagonisms that were later to add significantly to the divisions in the Indian Muslim elite. Team spirit, however carefully fostered, did not transplant well in Indian soil.

This sort of cultural-cum-intellectual history is hard to make interesting and intelligible to the outsider. Lelyveld succeeds in doing so by a judicious mixture of narrative, analysis and anecdote. His only major lapse is his exposition of the rules of cricket, which contains two errors and deserves to become a classic of its kind.

B. R. Tomlinson

The influence of Nuffield under Chester

Policy and politics: essays in honour of Norman Chester
edited by David Butler and A. H. Halsey
Macmillan, £10.00
ISBN 0 333 23561 4

Norman Chester, retiring this year from the wardenship of Nuffield College, is honoured by these essays written by former and present members of his college.

The introductory essay by A. H. Halsey is a sensitive valediction in which he describes how Nuffield, under Chester's creative guidance, met the challenge of advancing postgraduate studies in the social sciences, while maintaining the Oxonian collegiate ideal. The genius to create networks and to build institutions is lamentably lacking in present-day Britain. Oxford and Chester were lucky in each other.

The ablest essays are monodisciplinary attacks on particular issues. There is an elegant analysis by Geoffrey Marshall of police accountability which demonstrates how that recurrently resurrectable concept varies in different contexts. Disciplinary strength is visible, too, in M. F. G. Scott's essay on a profits test for public monopolies. The essays by George Jones and Jim Sharpe on local government finance after Luyfield and on the lack of functional justification for patterns arising from local government organization are very good of their kind. They both raise, however, the issue of methods and evidence. Essentially they both argue *a priori* or from historical evidence rather than show the way for institutional problems to be tackled by empirical studies within analytic frameworks, although we know that both authors are deeply involved in the attempts of British political science to become more analytic.

Other essays from some key figures are disappointing. David Butler's essay on modifying electoral arrangements is good micro-history which demonstrates well enough how the discussion has always been in-house, neither drawing on expertise from this country nor from abroad. But he gives no clue as to what that expertise might be, and does not discuss the assumptions underlying existing electoral arrangements.

There is, indeed, a tendency in many of the essays for institutions to be allowed a life of their own. So it is inevitable that opinions circumnavigate analysis and we find an essay on reforming procedure in the Lords actually stating: "A deep instinct for a public service and genuine pride in moderation motivate hereditary and life peers, particularly those who have mellowed after years in the Commons." That is a judgment deep from the bosom of the establishment. A social scientist would have been interested in analysing the recent trends in the activities of the second chamber in terms of the recruitment of peers, their individual expertise, and their political, social and academic connexions.

None of the essays is without interest and they are self-evidently a set of personal statements which, in their nature, are unlikely to reflect Nuffield's full range of scholarship. Nor should we expect methodological or substantive unity from the top of an academic system which prides itself on individual rather than collective work. But the volume none the less provokes thought about Nuffield's impact on the policy system particularly since Halsey claims, in his introduction, that the college has frequently deployed the "theories and interpretations collectively possessed by its economists, modern historians, political scientists and sociologists to illuminate the public issues of the day."

If that is true, it is not visible here. Nor is it in any event the model of interaction between policy, politics and social science that seems to be at work. Oxford has always succeeded in combining the traditional virtues with metropolitan connexions.

But it is difficult to connect what is recorded here with the patent need to energize the British policy system. British public administration remains intelligent and competent enough to be able to ignore studies related to policy which do not demonstrate the usefulness of direct and potent counter-analysis. Nuffield is not quite providing that service, and it should. With the collapse of the overblown Brookings metaphor, the case becomes stronger for the different centres of social science to demonstrate to government and to society that there are differences in style and contribution that can be made by the politicians, the leader writers in the heavy newspapers, the administrators and the academics.

It is difficult for the reader to see in this collection of essays, useful as so many of them are, signs that Nuffield College could begin to rival in Britain the contribution that Harvard, Columbia or Berkeley has been able to give to government in the United States.

Maurice Kogan

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BOOKS

A study of rhyme without reason

The Uses of Poetry
by Denys Thompson
Cambridge University Press, £10.50 and £4.95
ISBN 0 521 21804 7 and 29287 5

> In a sense the volume is propaganda for poetry. It stems from a belief that the restrictions on thought and language that have been imposed with the devotion of great resources to science have thwarted human beings and stifled their development; and that emotional education such as that given by the arts is needed for the growth of whole men.

Fair enough. This book does have a point, but it makes no attempt to prove it, and is therefore, as the author confesses, propaganda. A pity; for it seems likely that the belief in question is by no means wholly irrational. Certainly Yeats's definition: "the slow dying of men's hearts that we call progress" must strike a sympathetic chord in many ears today; and the example of "an academic biologist who remarked, 'All the birds will have to go'—as a result of protecting crops with insecticides" is, if true, a telling one.

However, the matter is surely not so simple; indeed it is almost unbearably complex. Which bits of progress would we wish undone? Anaesthetics? Antibiotics? Should we deplore the logic that has brought law from "intuitive" trial by combat or ordeal to its present rational procedures? An implicit recognition of some of the difficulties inherent in the idea of poetry as a panacea does indeed surface in the preface, but thereafter is seen no more—naturally enough, for it could well torpedo this buoyant propaganda for all-purpose poetry:

> But it must be stressed that there is no intention of idealising any past era; an age remarkable for beautiful poetry can be unpleasant and dangerous to live in. The period that produced Shakespeare and other poets was remarkable for vicious religious intolerance, capricious injustice, hideous punishments and a system of police spies.

So much, it might seem, for "emotional education" and poetry as "a practical aid to saner politics"!

What takes the place of argument is itemizing and assumption. The reader is bombarded with examples of the uses of poetry, throughout all history and from all over the world. It has been used to aid work, to cure illnesses, to cast spells, to ensure fertility, to order the world, to convey primitive science, to facilitate memorizing, to promote nationhood, philology, lexicography, politics, religion, morality, and so on. All perfectly true, and of considerable anthropological and antiquarian interest, even fascination. What is dubious is the underlying assumption that all this was a Good Thing then and would be now; an assumption that is indeed the book's *raison d'être*—"for much of its history poetry has had a practical value, and so it should continue". Whether this was so, or whether poetry was used simply *faute de mieux*, and whether poetry of, say, weather-lore, of spells, and of lament should all count as lost benefits remains unargued.

Even blatant discrepancies pass without comment. Thus early patriotic poetry seems to be praised for promoting nationhood. Not so later patriotic poetry: "Kipling's crude and brutal imperialism brought him popularity". But some earlier patriotic poetry seems equally crude and brutal—and highly undesirable as an education of emotions. Again, what follows from the fact that "the Gauls and the Brahmins of India carried on their instruction in the form of traditional poems orally transmitted"? Should we follow suit? The only point made is that:

> Poetry was established as a normal part of life, and the mind was trained beyond our capacity today, when the development of logical power and the nominal availability of so much printed matter have weakened the memory.

No doubt. But would we wish to teach, say, geography in verse, and without the aid of "printed matter"? And is "the mind" equivalent to the memory as seems to be implied? Above all, should our education of the emotions imply the jettisoning of logic? Obvious questions which, like many others that crop up, go unanswered.

Certainly, lack of logical rigour is a major drawback to this book. Apart from the matters already indicated, there is a regrettable tendency to be pretty certain about matters of which we know nothing, and never can know anything—and then to derive evaluative assumptions from these intuitions. For instance,

> No one has ever taught a child to speak his own language.

What sense can be made from this? We know that a child will not learn his own or any other language if nobody ever speaks to him. Again,

> It seems unlikely that speech developed to name objects or convey concepts; rather its beginning lay in the sounds produced by emotions.

Does it? And did it? We shall never know, for the speech of our most primitive peoples names objects *and* conveys feelings. Or,

> It is reasonably clear that poetry came before prose and was linked with ritual dancing.

So primitive man danced and sang before he said "*My* meat!" or "Beware strangers!"? Well, maybe. Clearly these assertions are made because they support the idea not merely that poetry is natural but that it is more natural than prose, and the idea that man is more of an emotional and spiritual being than a rational and material one. Unprovable and irrelevant ideas, both of them.

In such ways a highly complex issue is simplified, and thereby falsified, and this is a pity, for it is an important issue. It is true that some poetry, sometimes, can be therapeutic. It does seem evident that some hooliganism is due to inarticulacy, and there is some evidence that our capacities are being developed rather lopsidedly.

Certainly there is room for a book that will coolly and carefully investigate the role poetry—or rather some sorts of poetry—could play in improving matters. But this is not it.

Allan Rodway

Reading Pater's private mind

The Case of Walter Pater
by Michael Levey
Thames and Hudson, £8.50
ISBN 0 500 01193 1

Although Pater is an important enough figure to deserve a biography he presents a formidable challenge to any biographer.

The scandal excited by his youthful conversations on theism and by his later advocacy of the absolute primacy of aesthetic pleasure gradually induced in him a determination, in the interests of social survival, to conceal his mental life. In this he was abetted by his two sisters, with whom he resided for the last 25 years of his life. After his death they were at pains to discourage inquiries about their brother and took care that his now lost early letters, which were apparently free from the stilted caution of his later correspondence, were not quoted by an early biographer. This has left later biographers with only the unrevealing polished opacity of the letters of Pater's later years.

Confronted with so unpromising a subject, Mr Levey has produced a remarkable book. Part of it comprehensively summarizes such definite facts as are known about, for example, ancestry, addresses, travels, contemporary comments and so forth. When these facts run out, as they fairly soon do, Levey is not without other resources. He claims that there is an unconventional and deeply interesting Pater suppressed behind the conventional public mask. This private self, he argues, found expression in Pater's imaginative writings. He cites in support of this view one of Pater's closest friends, William Sharp, who said "there are few more autobiographical writers". Taking Sharp at his word Levey attempts to read off Pater's private mind from his imaginative works.

Given the paucity of direct evidence in letters and conversations about Pater's inner life, Levey seems to me to be entirely justified in the strategy he adopts. He makes felicitous and often inspired inferences from Pater's writings and usually manages to ground these inferences in what is known about Pater's life. There gradually emerges the picture of a complex and unconventional character quite at odds with the staid persona Pater was at pains to present to his contemporaries.

One striking benefit of the treatment of Pater's works as a form of spiritual autobiography is that Levey is able to give a more satisfactory interpretation of these works than has hitherto been available to us. He shows, for example, how much of what Pater says about art is far removed from mere art criticism and why the remarks on art were so heavily influential in forming a late nineteenth-century aesthetic sensibility. A particularly fine example of interpretation is Levey's treatment of the essay on Leonardo with its often quoted, but, I suspect, hitherto little understood, remarks about the Mona Lisa.

It is, I think, no criticism of this excellent book to say that although it gives us a persuasive picture of the private Pater it leaves unanswered certain questions about Pater's aesthetic theories. We lack as yet a satisfactory defence of Pater's belief that art is primarily important as a source of pleasure, partly because we lack a clear understanding of the various forms that this view can take. When we have that defence we will have, in addition to this fine study of the case *of* Walter Pater, a case *for* Pater.

Colin Lyas

Recorder of every shadow

Looking at Architecture with Ruskin
by John Unrau
Thames and Hudson, £7.50
ISBN 0 500 34075 7
Ruskin (second edition)
by Quentin Bell
Hogarth Press, £3.75
ISBN 0 7012 0459 1

Late in his life William Morris said of John Ruskin's *Stones of Venice*, with its important chapter on the "Nature of Gothic": "to some of us when we first read it, now many years ago, it seemed to point out a new road on which the world would travel. The lesson which Ruskin here teaches us is that art is the expression of man's pleasure in labour . . .".

Such edicts were as frequent as the footnotes to the rhetorical outbursts of the ardent platform-stumpers. John Ruskin's views on architecture are scattered as widely and John Unrau has provided what he calls "an extended introduction . . . searching out and arranging what he "said", on architecture alone, with comment and careful order. He arranges his book to show Ruskin's ideas on two and three-dimensional composition, on ornament (like perspective) at close, intermediate and long distance, and finally on colour.

Before Ruskin retired to go on writing and sketching at Brantwood on the eastern bank of Lake Coniston, he had already written a vast amount in an exaggerated but often beautiful style. The flaws, the petulant outbursts, the dogmatic statements are all there, and the author came to loathe them as much as his contemporary critics. But anyone who has looked at his sensitive drawings—Unrau reproduces four in colour, and several more among his 101 black and white illustrations—will forgive him much. "The south side of St Mark's after rain" is limned with a care for architectural detail set against the black soaked pavement which makes it one of any number of masterly compositions. They were created with an intensity moderated with "such tenderness and sensitiveness that no shadow, no hue, no line, no instantaneous and evanescent expression of the visible things around him" was left unrecorded. John Unrau has provided us with a valuable book which patiently unearths such comments of Ruskin, and sets them out in a clear pattern.

Few people have read all 39 volumes of Wedderburn and Cook's Library Edition of Ruskin. Quentin Bell has, and one suspects that it has added just a little to his mischievous, intensely human character, which endears itself to his friends. His small book—just over 150 pages—has always been the best introduction and is now reissued in a second revised edition.

While one regrets that the dust-jacket portrait of Ruskin himself is not given as a frontispiece, there is as much relief that the author's fluent words are not interrupted for a moment by a batch of illustrations, however relevant. Quentin Bell says that whatever skill he has acquired in the writing of biography he owes to "a year's immersion in Ruskin". The skill is considerable, and he probably "merits a first". However, Charlotte Brontë's reaction to the first volume of Ruskin's *Modern Painters* seems more appropriate and only a little too cloying, "I feel now as if I had been walking blindfold—this book seems to give me eyes". May we never be ashamed to look, like Ruskin, and like Quentin Bell, for scented thickets and fireflies "moving like fine-broken starlight through the purple leaves", of points of shade and gilded light, true ornament, "labyrinthine knots and shadows along wall and roof", and "the mellow hues of the natural stone".

Geoffrey Beard

This week's reviewers

Geoffrey Beard is director of the visual arts centre at Lancaster University;
Margaret Boden is reader in philosophy and psychology at Sussex University;
Margaret Canovan is lecturer in politics at Keele University and author of The Political Thought of Hannah Arendt;
C. S. Fenton is lecturer in sociology at Bristol University;
E. J. Feuchtwanger is reader in history at Southampton University and author of Gladstone;
Maurice Kogan is professor of government at Brunel University;
K. E. Pitman is senior lecturer in numerical analysis at Imperial College, London;
Allan Rodway is reader in English at Nottingham University.

London Library tribute

A collection of essays and poems in tribute to *The London Library* edited by Miron Grindea is published by the Boydell Press at £3.50. Originally compiled for a special number of the periodical *Adam*, it is a celebration of the library by some of its more notable members. Letters from former readers, Henry James, Edmund Gosse and others, are followed by contemporary accounts of the function of the library, and it is clear that there has been continuity in its influence in literary society. The library is commended for its practice of open access shelving, its lending facilities and its remarkably able staff. These include the legendary librarian, Mr Cox, who worked in the library for nearly 70 years, and who became a well-known figure in literary circles.

First Steps in Numerical Analysis

R.J. HOSKING, D.C. JOYCE and J.C. TURNER

The availability of computational aids has greatly extended the theory and application of Numerical Analysis in the last twenty years, so that students of many disciplines now benefit from a basic knowledge of the techniques of the subject. This book provides a brief, easily-read, yet comprehensive introduction to the basic ideas and methods of Numerical Analysis. The subject matter is organised into fundamental topics presented as a series of 'Steps', each of which contains sufficient material for two lectures. At the end of each step a 'Checkpoint' is included to gauge the student's understanding of the concepts introduced, and this is followed by a set of exercises. Answers to the exercises are provided at the end of the book.

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Mill Road, Dunton Green, Sevenoaks, Kent TN13 2YD.

Hodder & Stoughton

BOOKS

Balancing theory and practice

The Numerical Treatment of Integral Equations
by C. T. H. Baker
Oxford University Press, £22.50
ISBN 0 19 853406 X

For some time now, visitors to Manchester have returned with news of a book by Dr C. T. H. Baker, and its publication has been awaited with interest. It proves to be a comprehensive account, of nearly 1,000 pages, and is very welcome since the available books are limited in scope or devoted to particular types of integral equation.

It is increasingly common for boundary and initial value problems in applied mathematics, physics and engineering to be formulated as integral equations which are solved numerically. Addressing his book to numerical analysts and their research students in universities and also to industrial research groups, Baker admirably balances the description and practical assessment of numerical methods with theoretical analyses of their convergence and the computation of error bounds.

The book has six chapters, the first two being relatively short. Chapter one is devoted to the classification and solvability of linear integral equations and to elementary functional analysis, taking us as far as the principle of uniform boundedness and the Fredholm alternative for compact operators. The existence of solutions of nonlinear equations is briefly considered via successive approximations and the Newton-Kantorovich theorem. Chapter two, entitled "Numerical Analysis" begins with interpolation, least squares and so on, but is mostly concerned with numerical integration. Attention is called to quadrature formulae which can be written as Riemann sums and this class of formula figures prominently in the sequel. The chapter concludes with brief references to algorithms for the solution of linear and nonlinear algebraic equations and of the algebraic eigen problem.

Chapter three is devoted to the eigen problem for linear Fredholm operators where the kernel is at worst piecewise continuous. Quadrature methods are described first and the use of extrapolation is illustrated by computations in a number of examples. These are followed by methods such as collocation which lead to expansions in terms of preselected functions and the remainder of the chapter is given to analysis. For integration rules which are Riemann sums, the quadrature method is shown to be equivalent to replacing the kernel by a degenerate kernel composed of step functions and this original approach leads to some attractively easy convergence proofs. It also provides unity, for it is well known that expansion methods are also equivalent to replacing the kernel by a degenerate one.

In chapter four, entitled "Linear equations of the second kind", the discussion is limited to Fredholm equations with continuous kernels. As before, quadrative methods are considered first, with h squared—extrapolation and deferred correction, but with no mention of the iterative variants of the Nyström method due to Brakhage and Atkinson. Expansion methods follow, with emphasis on the use of Chebyshev polynomials. The problems associated with collocation at equispaced points using high degree polynomials are pointed out, but only a passing reference is made to the use of piecewise polynomials (splines) as basis. In line with the analysis of chapter three, the author again relates his methods to the solution of equations with degenerate kernels. There is some account of the Anselone-Brakhage-Mysovskii approach to quadrature methods but no mention of the work of Noble using prolongation and restriction operators.

Chapter five discusses the treatment of linear Fredholm equations of the second kind when the kernel is weakly singular or when the solution is non-unique. It also includes singular integral equations, equations of the first kind and nonlinear equations, all with fixed limits of integration. For weakly singular kernels, quadrature methods using product integration are thoroughly explored. Expansion methods are also considered and the opportunity is taken to give some analysis of projection methods. Singular integral equations (with Cauchy principal values) fare less well, sharing a mere 12 pages with equations on an infinite interval. The shortcomings of quadrature methods for equations of the first kind are well brought out and emphasis is placed on regularization methods. Nonlinear equations are handled by quadrature and expansion methods and also by variational methods.

The concluding chapter is devoted to linear and nonlinear Volterra equations of the second kind and to linear Volterra equations of the first kind. Step-by-step methods derived from quadrature formulae (including product integration) receive the greatest attention, but accounts are also given of Runge-Kutta and block-by-block methods. The stability of difference schemes is examined without too much abstraction and as in previous chapters the discussion is completed with detailed convergence proofs.

The book has been produced by reducing the original typescript and consequently there are relatively few errors and misprints. But the reduction in size does make it difficult to distinguish certain symbols. A 45-page bibliography has entries to 1976.

K. E. Pitman

Beach-dwellers

Life in Sandy Shores
by Alan E. Brafield
Edward Arnold, £3.20 and £1.50
ISBN 0 7131 2681 7 and 2682 5

For most of us the sandy shore is a place to enjoy ourselves for a few days, with the only problem being that of sunburn. But what about the permanent inhabitants?

Dr Brafield outlines the problems of the habitat associated with its unstable nature and considers how most of the environmental variables are correlated with the grain size of the sand. He singles out the oxygen level as one of the most important variables and shows that it is generally low in fine-grained sediments, associated with reducing conditions in the chemical environment. The inhabitants of the sand are then briefly introduced before an account is presented of how they overcome their various environmental problems.

Most of the animals on the shore show a distinct zonation, so an important subject is the ways in which they are able to choose their level and then maintain it. The problems of extracting small items of food from large quantities of sand or water are discussed in terms of feeding methods. The difficulties of obtaining oxygen when embedded in an environment that may be anoxic are considered in relation to adaptations: to increase oxygen uptake or to survive at low oxygen tensions. The final problem considered is that of reproduction, a serious one when one animal is unlikely to meet its partner, and adaptations to obtain synchronous shedding of gametes are described. The account closes with a discussion of population dynamics, production and energy flow within the shore ecosystem.

The selection of material from the vast quantity available is good, the chosen topics being among the most interesting, and the presentation with an eco-physiological bias is most welcome. If there is a major gap in the coverage, then it is the lack of consideration of the microfauna and flora, either in their own right, or as examples illustrating the various concepts discussed. The need for brevity has in places resulted in data being presented without sufficient explanation. These are minor points, since the book is well written and will provide a good introduction to the subject, particularly as it is well endowed with references for further reading.

One can happily recommend it, not only to students at school or beginning at university, but to all who wonder what is happening underneath them as they sunbathe.

Andrew Malloch

The need to manage resources

Biological Management and Conservation
by M. B. Usher
Chapman & Hall, £5.95
ISBN 0 412 21480 6

When I was a child my mother bought kippers for 5d a pair and we ate them at least once a week. You will be lucky if you can find them now for less than 40p. This twenty-fold increase in price is far more than the general increase in living costs, and some people are wondering if the herring may not soon disappear as a food source altogether. The case of the mackerel might be the same in 10 years' time.

The history of plant life is the same dismal story. Spenser and other Elizabethan poets took flowery meades for granted. Now they are very difficult to find, and the recent publication on *Nature Conservation and Agriculture* by the Nature Conservancy Council shows that the loss of wild plants and their habitats is continuing at an alarming rate.

So the issuing of Dr Usher's book in paperback form is greatly to be welcomed. The disappearance of herrings, whales, pasque flowers, fritillaries, large blue butterflies, trumpeter swans—the list is endless—due to failure on our part to manage our resources is something that affects us all. The stupid thing, so amply shown in this book, is that we now know a very great deal about the fundamental characteristics of natural populations, sufficient to show how individual species, including those listed above, can be managed in order to restore their numbers or to exploit them in a stable manner where appropriate.

Usher takes a very analytical approach, to show how population dynamics and exploitation can be explained in mathematical terms. This is the strength of the book but also its weakness, because unfortunately the natural world is excessively complex, and its management and conservation even more so. Plant and animal populations are influenced by many things including soil, climate and biotic factors and competition from other organisms, each of which deserves close attention. The biological basis of the management of a floristically rich hay meadow, a set of endangered arctic-alpine species or a polluted river is more than population dynamics.

The way Usher gets over this problem is to devote the second half of the book to a critical examination of conservation and management problems in practice, and to include as an example the complete management plan of a nature reserve, at Aberlady Bay in East Lothian. The result is very illuminating, but one cannot but be left uneasily wondering about the range of knowledge and skills needed for biological management. The book will, however, be of considerable value to all biologists involved in conservation and ecology. At the same time it shows how much the biologist is needed in planning the world of today and of tomorrow.

A. D. Bradshaw

Basis of the electronic age

Revolution in Miniature: the history and impact of semiconductor electronics
by Ernest Braun and Stuart MacDonald
Cambridge University Press, £8.50
ISBN 0 521 21815 2

It must be a publisher's dream to place on their lists a book subtitled, *The history and impact of semiconductor electronics* at precisely the moment when public and government interest is so strongly aroused by the many and various predictions of economic decline and social disruption threatened by the microprocesser revolution. This work is not a package hurriedly concocted to tap a market, but a sound historical study of the development of a technology which is heralded by some as the generator of a new wave of social and economic change comparable to those produced by steam and electric power.

Starting with the brief report on *The New York Times* entertainment page of the demonstration of a transistor at Bell Telephone Laboratories on July 1st, 1948, the narrative proceeds at breathless pace through the resolution of early technical difficulties, the mushrooming of new companies, the battles to recruit top scientists and engineers, the development of mass-production techniques, the leap from the transistor to integrated circuits, and the aggressive marketing and cost-cutting which so marked this new industry. The authors have been able to portray the remarkable level of technical and entrepréneurial intensity through extensive interviews with many of those engaged in the transistor business in its early days, though the many quotations do not always blend well with the text.

A very distinctive feature of this work is the extent to which the history has been constructed within a framework which has evolved in the field of "science studies". For more than 10 years, a small band of enthusiasts have been seeking to broaden the scope of science education by emphasizing the value of the study of the form and development of science and technology in their own right and by producing teaching materials to show students how social forces affect the development of scientific knowledge and vice versa.

This book could be regarded as one of the fruits of this programme, the value of which is demonstrated in a number of ways. The analysis of the role of science in the development of the transistor shows clearly the variety of leads, the blind alleys, the missed chances and lucky breaks which characterize real, rather than idealized (whether by scientists or philosophers) scientific research. The growing understanding of the innovation process is reflected in the demonstration of the importance of such various factors as military funding, large domestic markets, availability of risk capital, entrepreneurial flow, highly educated and motivated staff and the mobility of top personnel in industrial success.

The semiconductor industry provides a clear example of the life-cycle of a modern industry from birth, with its high expenditures on basic research directed to improve the performance of products, to a phase of maturity where the emphasis is on decreasing price, though improved production techniques and research constitutes a much smaller proportion of company activity.

Perhaps reflecting the speed of development of new markets for microcircuitry, the assessment of the impact of semiconductors is not carried out with the same scholarly attention to detail. A few tentative "reflexions on an electronic age" are offered which in no way constitute a serious analysis of the possible effects that the further development of the industry could have.

Who should read this book? Certainly any non-specialist who wishes to achieve a basic technical literacy in this electronic age. It could also provide an extremely useful case study for science students (and dare one even suggest, non-science students?) of the ways in which science is shaped by and in its turn affects market demands, industrial development, economic growth, social pressure and national life styles.

Ron Johnston

Viewing data

The Analysis of Cross-Classificatio
by H. T. Reynolds
Collier-Macmillan, £9.75
ISBN 0 02 926390 5

The Analysis of Cross-Clas
Categorical Data
by S. E. Fienberg
MIT Press, £7.70
ISBN 0 262 06063 9

Tabulation of individual reco according to a number of dist qualitative properties (physi characteristics, health, educatio and occupation, etc) simultaneou is a basic method of studying sta tical data. Once such a table h been produced, questions will be asked about the dependence of classifications and about measur of differences: if a sample of a population has been cross-classif according to employment and m tal status, does it indicate fo the population as a whole that r tive frequencies of marriage a divorce vary with type of empl ment and, if so, how are the magn tudes of any discrepancies ca satisfactorily measured?

For a social scientist wishing t gain some understanding of th analysis and interpretation o records of multiple cross-classif cations, Dr Reynolds has much t offer. He describes well-k readers not assumed to have mu knowledge of mathematics a statistics—the many measures th have been proposed for dispropo tionalities in such contingency tables. Though he illustrates th relation to the well-known ch squared test and the ways in whi this test can be partitioned, he fa to discuss critically the relativ merits of the alternatives or t distinguish adequately between th stories they tell. He displays h own interest, at the expense o readers from other countries, b basing almost all his examples o records of United States voters' elections.

Unfortunately, major weakne appear just where a social sci might seem to be a more appr ate author than a professional st istician. Despite careful discuss of many logical and statistical re trictions on his analyses, Reynolds says nothing about acquisition of his data. Yet good sampling tech niques are a prerequisite for all of his examples and a possible caus of complications from neglected stratifications. Most surprisingly, he does not mention the need for independent selection of all in dividuals, or the consequences for his methods if, say, the sample con sisted of family or other social groups likely to show inter-personal correlations. Later chapters would benefit from recognition that procedures for complex problems can often be described simply, leaving implementation of extensive calculations as a task for computer software that need not be studied in detail by social scientists.

Dr Fienberg also writes for non-statisticians, carefully and informatively: one would not easily find another book that so concisely presents an account of the many methods proposed in recent years for multi-way contingency tables. On academic criteria, he has produced a far better book than Dr Reynolds. His examples are drawn mostly from the social sciences but with a broad range of topics. He does not avoid the weaknesses of the other book, but his purpose is to outline the theory and computations for different techniques rather than to advise on their practical use. He is particularly good in contrasting the use of one classification as a "response" and analyses in which all classifications are regarded equivalently. Whether his mathematically and verbally condensed, somewhat arid style will succeed with non-statisticians is questionable, but statisticians will value his book for reference alongside Cox's.

If increasingly extensive data can be collected, most facets of contingency tables are likely to show "statistical significance". Neither of these books escapes from dependence upon tests for rejection of, to the acceptance of "models" to the more positive estimation of meaningful parameters.

D. J. Finne

BOOKS

Come buy!

nomic Policy and Projects: the
elopment of a consumer society
early modern England
Joan Thirsk
rendon Press: Oxford University
£6.00
N 0 19 828274 5

Thirsk's new book, based on her d Lectures for 1975, is a most portant contribution to our derstanding of early modern lish economic history.

Although its main themes are liar, its interpretations are h and challenging. Dr Thirsk ues that between the 1540s and 0s there was "a deliberate ernment policy to foster the e manufacture of consumer ds" in order to create employ- ent. The success of this policy monstrated the presence of a scent mass market for such goods, d compelled contemporary econ- ic writers to reconsider the portance of demand in the econ- y. Before the seventeenth century demand for consumer goods, ecially imports, was normally arded as a threat to the balance trade; increasingly consumption e to be seen, in the words of am Smith, as "the sole end and rpose of all production".

Projects to establish industries Tudor and Stuart England were mined more than 70 years ago George Unwin and W. H. Price. ey concluded that many, particu- ly those established by patents monopoly, were the outcome of alid fiscalism. Dr Thirsk, it seems me, returns to the even older rpretation of William Cunning- m, though with a different empha- s. Cunningham argued that in- stries such as armaments were omoted by William Cecil, Eliza- eth's chief minister, to secure the efence of the realm. She points ut that Cecil was closely asso- iated with the "Commonwealth- en" who were seeking ways of mploying the growing numbers of oor. To this end, the government ssisted enterprises of all kinds, cluding tobacco and woad grow- g, hemp and flax cultivation, linen d fustian manufacture, new aperies and stocking-knitting, pin d starch production, and much e. Aid was given to entrepre- ers who would introduce new nufactures, imports of competing ds were banned, patents of opoly were granted, and skilled eign workmen encouraged to le in England. If the new emes sometimes interfered with blished crafts or were exploited speculators for private gain, Thirsk argues that such incidents e but "the scum on the surface healthy current of water". evidence is very strong, ough possibly the water was tler then she suggests.

ow much employment did the industries create? A great deal ng part-time rural labourers for n the manufacture of consumer ds provided extra cash "and something to spend the cash on, whether it was a brass pot for the kitchen shelf, a colourful pair of striped stockings, or a knitted Monmouth cap". Woad production, she claims, provided seasonal employment for 20,000 people in 12 counties in the 1580s, while stocking-knitting may, amazingly, have employed 100,000 people a year on a part-time basis during the seventeenth century. When Thirsk resorts to counting, her figures seem very high: it is difficult otherwise to understand why contemporary economic writers remained so preoccupied with underemployment, a point she does not consider. Nevertheless she clearly demonstrates the variety and importance of many hitherto neglected industrial employments.

Who demanded the new commodities? "Successful projects", according to Thirsk, "spread like wildfire", suggesting a broad-based demand. Sir Henry Sidney, for example, gave his children a generous pin allowance in the 1570s; and to cater for a less aristocratic market among peasant farmers, a draper's shop in Westmorland, England's poorest county, carried a stock of 17,000 pins. To take another example, the demand for starch developed in the 1560s with the fashion for stiffened ruffs and its manufacture spread from London to the provinces. Even when ruffs went out of fashion, starch remained an essential household requirement.

Many of the products discussed by Dr Thirsk were bought by women, which, she believes, is why they have been so often ignored. In a passage surely inviting prosecution under the Sex Discrimination Act, she states that men have determined the agenda of economic history: "starch, needles, pins, cooking pots, kettles, frying pans, lace, soap, vinegar, stockings do not appear on their shopping lists, but they regularly appear on mine".

Although not in the habit of buying stockings, lace or frying pans—does Dr Thirsk buy frying pans *regularly*?—I am persuaded by the force of her argument. I am less happy about her claim that the beginnings of a mass market for manufactured goods can be seen in the first half of the sixteenth century. Demand, she insists, did not come exclusively from the upper classes; had it done so it could hardly have constituted a mass market. Yet it is difficult to see it emanating from the large and growing numbers of wage-earners and landless people whose incomes were continually eroded by inflation until the 1640s, well after the end of the main period of projects. I agree with Dr Thirsk, however, that the Phelps Brown-Hopkins index of purchasing power, on which historians of this period rely, is unsatisfactory. Here is yet another subject that needs reexamination as a result of this most stimulating study.

L. A. Clarkson

Reason and the monarchy

Order and Reason in Politics: theories of absolute and limited monarchy in early modern England
by Robert Eccleshall
Oxford University Press for the University of Hull, £6.50
ISBN 0 19 713431 9

By the close of the seventeenth century two novel concepts had arrived in English political thought, although they were not yet fully assimilated. Natural law offered irreducible individual rights preserved in a social contract, and the idea of a sovereignty provided a voluntarist explanation of law as the emanation of a supreme will. Government was obeyed because it fulfilled a useful function; law was authoritative because someone had to make definitive rules. Under the older dispensation political society accorded with the natural harmonies of the universe. Human laws reflected divine reason and obliged only if they concurred with it.

The ideological origins of the Civil War is well-trodden territory, for new theories erupted primarily as a result of the crisis of the 1640s. There has been an irrepressible tendency to depict the royal cause as ill-served by the rusty blunderbuss of divine right, hewn down by new model battalions of parliamentary supremacy, citizen liberties, and prudential individualism.

Dr Eccleshall's lively book is engaged against such interpretations. In particular he takes issue with the work of W. H. Greenleaf. Greenleaf's *Order, Empiricism and Politics*, (1964) described royalist doctrines as shaped out of the medieval concordances of the angelic, natural and human hierarchies: the correspondencies and analogies once described by Lovejoy and Tillyard. In contrast stood Baconian new science: a mechanical and atomist universe productive of an empirical and utilitarian human world.

Believing it mistaken to presume that Christian Aristotelianism could imply only a royalist conclusion, Eccleshall's case is that two styles of thought arose within that single world-view. Neither absolute nor limited monarchism added up to modern theories of sovereignty or individualism and English ideologies remained essentially medieval down to the 1640s. The differences arose over who was to interpret right reason: was the earthly king so pure a reflection of divine monarchy as to be a sure guide, or was individual human reason so feeble that divine will was safely found only in communal wisdom?

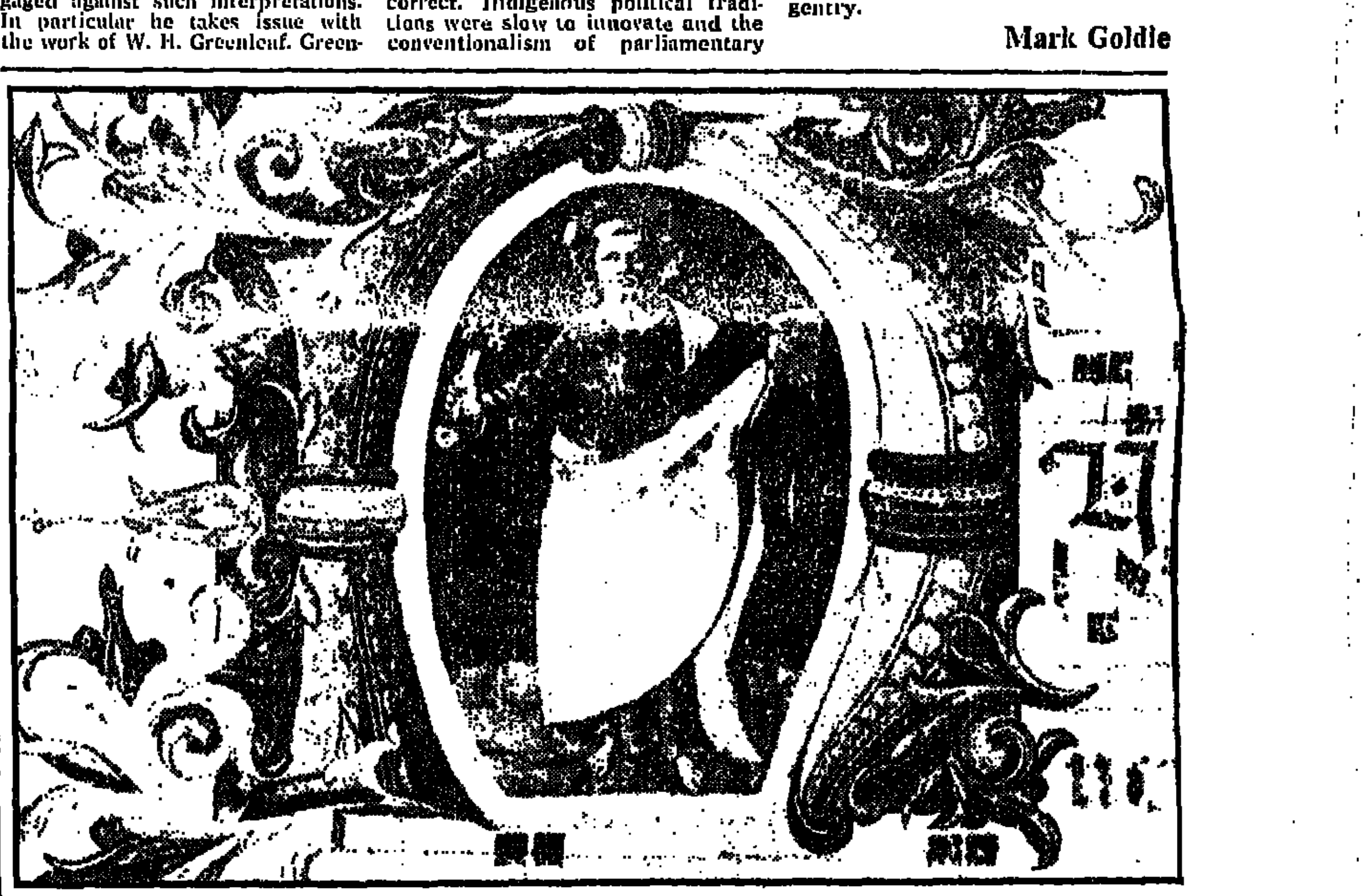
One valuable perspective is the connexion between the decline of parliament after its Henrician heyday and the plausibility of a theory of parliamentarily limited monarchy. The result was the virtual disappearance after Smith's *De Republica Anglorum* (1565) of a parliamentary theory and its replacement by the notion that communal wisdom lay in common law.

Eccleshall's thesis is substantially correct. Indigenous political traditions were slow to innovate and the conventionalism of parliamentary leaders like Sir John Eliot is notorious. But in his enthusiasm Eccleshall's case is sometimes overdrawn. In the final chapter new doctrines appear "overnight, as it were". Dramatic disjunctions do occur in the history of political thought: ideologues use new theories when they need them. But they do have sources. Political theory before the Civil War will seem static if one is resolutely Anglocentric, and this Eccleshall tends to be; the impact of Machiavelli, Calvin, Bodin and Grotius is not discussed.

Their influence was strongest after 1640 but natural and Roman law reasoning was present earlier through such writers as John Selden, the immigrant civilian Alberico Gentili, and John Cowell, author of the controversial *Interpreter* (1607). Henry Parker was familiar with natural rights doctrines and Filmer ingested a Bodinian concept of sovereignty; the description of both as backward-looking is probably overstated.

The admitted premise behind Eccleshall's account is that the function of a system of belief is to ameliorate social and political tensions so that normally polemicists will stick to familiar conceptual frameworks. If the result of this approach is an undue sense of stasis, its value is in its effort to identify "background assumptions" and "patterns of belief" and its constant aim at relating political philosophy to the social interests of the English landed gentry.

Mark Goldie



This miniature initial letter N is by Fra Angelico (born c 1400), and is reproduced from Italian Renaissance Illuminations by J. J. G. Alexander (Chatto & Windus, £9.95 and £4.95).

Decentralization under Richelieu and Mazarin

al Change in France under
lieu and Mazarin 1624-61
chard Bonney
d University Press, £15.00
0 19 822537 7

Bonney's scholarly examination e strengths and weaknesses of l power under Richelieu and rin, based on his own extensive rches and incorporating the lusions of other recent histor- on more specific aspects of the lem, deserves the warmest wel- e.

begins by describing the hinery and personnel of the cen- government, with particular rence to the intendants. In splen- detail, he considers their social ns, attitudes, training, earlier subsequent careers, and the ly connexions which bound to other members of the esse de robe. He then inizes their daily activities as inistrators in the provinces, ing us at the same time a clear account of the behaviour of privileged social groups, the workings of local institutions and the tensions between and within them, the priorities of their members, their skilful use of delaying tactics and their genuine belief that they were acting legally against illegal interference from above.

This complex administration was remarkably resistant to change, not just because of the stubbornness of the venal office-holders, but also because the royal ministers recognized that reform must proceed slowly and that privilege had to be respected. Thus, if Richelieu increased the used of intendants, they nevertheless remained temporary visitors to the provinces, functioning usually as investigators and sometimes as supervisors but more rarely as executive officials. Even then most of their judicial decisions could be reversed by an appeal to the sovereign courts. They were normally charged with specific tasks arising from short-term problems, and were not part of any carefully planned administrative reform.

Only their most urgent task of raising extra revenues for war caused them to act more aggressively. Even if they could justify this on the grounds of the king's "necessity", it served to unite the forces of opposition against them, even though these new levies were often not actually paid. Therefore the reduction of taxation, the making of peace and the removal of the intendants became interlinked in the demands of aggrieved provincial notables, who were often unsympathetic to the international responsibilities of the royal ministers. These fiscal policies provoked hundreds of local revolts and Bonney has perhaps exaggerated the ability of the intendants to suppress them. More often than he suggests, the rising was ended by a government compromise or withdrawal and, although the crown might send in troops, the rebel leaders often went unpunished even when they had been sentenced, and further revolts might quickly follow.

In carrying out some of his duties, the intendant found friends within the divided ranks of provincial society. Some lesser courts and officials discovered that he would cooperate with them against the *parlements* and *trésoriers*, the bishops helped him repress the Protestants, many people supported his attempts to improve the army, and in Dauphiné the Third Estate aided him in suspending the provincial estates. Yet in most *pays d'états* the intendant could achieve little, and the crown had to rely instead on the aristocratic governor, who could use his prestige and considerable powers of local patronage in the best interests of the crown. These great nobles could, of course, be as dangerous to the king as they could be helpful because, although they championed the idea of strong central authority, they sometimes disapproved of the way it was being exercised and might even become rebels.

Mazarin tried unsuccessfully to conciliate the nobles whom Richelieu had alienated, although he did swiftly reconcile the Frondeur governors to the crown in 1652. After the Fronde the government was very cautious in its dealings with the provinces and in its use of intendants, although the war effort of the later 1650s still created a state of near anarchy which seriously alarmed Mazarin. After the peace of 1659, the ministers remained cautious and were able to reduce taxation, which must have seemed a resounding victory to the opposition forces.

Thus, although Bonney maintains that there was an extension of governmental control in this period, his detailed analysis clearly shows how limited were the basically supervisory powers of the intendant and how effective were the forces of decentralization in France.

Roger Mettam

هكذا من الأصل

NOTICE BOARD

Noticeboard is
by Patricia
and M

Chairs

Peter Jeremy Baron, a lecturer in the department of agricultural marketing at the University of Newcastle upon Tyne, has been appointed to the new chair of agricultural marketing at the University College of Wales, Aberystwyth.

Mr Richard Henry Macve, lecturer in accounting at LSE, has been appointed to the Julian Hodge chair of accounting at the University College of Wales Aberystwyth.

Dr D. W. Brocklesby, head of the department of parasitology at the Institute for Research on Animal Diseases, Berkshire, has been appointed to the chair of tropical animal health at the University of Edinburgh with effect from October 1, 1978.

Dr Asa G. H. Blakeley, senior lecturer in pharmacology in the University of Glasgow, has been appointed to the chair of applied physiology at the University of Leicester.

Dr Peter Roland Freeman, lecturer in statistics at University College, London, has been appointed to the chair of statistics at the University of Leicester.

Dr Michael Adler, senior lecturer in the department of community medicine, Middlesex Hospital Medical School and honorary consultant physician at the Middlesex Hospital, has been appointed to the newly established Duncan Guthrie chair of genito-urinary medicine at the Middlesex Hospital Medical School, from January 1, 1978.

Mr Peter George Sammes, professor in organic chemistry at City University, has been appointed to the chair of organic chemistry at Leeds University from April 1, 1979.

Mr David Aspinal, at present professor of electrical engineering in the University of Wales and head of the department of electrical and electronic engineering in the University College of Swansea has been appointed a professor of computation at UMIST.

Mr Anthony Ian Ogus, a senior research fellow at the Centre for Socio-Legal Studies, has been appointed to the third chair of law at the University of Newcastle upon Tyne, from October 1, 1978.

The University of Newcastle upon Tyne has granted the title of professor emeritus to the following: **Professor Albert Louis Latner**, department of clinical biochemistry; **Professor Kenneth Stockdale Reid**, department of Spanish and Latin-American Studies; **Professor Frances Joseph McQuillin**, department of organic chemistry.

Dr Derek Frank Roberts, reader in human genetics at the faculty of medicine at the University of Newcastle upon Tyne, has been appointed to a personal chair.

Dr William Walker, a consultant physician lecturer and a personal reader in haematology at the University of Newcastle upon Tyne, has been appointed to a personal chair.

Professor D. V. Lindley, formerly head of the department of statistics and computer science at University College, London, has been appointed to an honorary professorship in the department of statistics at the University of Warwick.

Dr P. W. McMillan, a reader in the department of physics, University of Warwick, has been promoted to a personal professorship from October 1, 1978.

Dr M. Mallett, a reader in the department of history, University of Warwick, has been promoted to a personal professorship from October 1, 1978.

Grants

Aberdeen

Engineering—£20,585 from the SRC for a project on electro-chemical discharge finishing of dies and moulds, under the direction of Dr J. A. McGeough.
Geography—£21,500 from the Scottish Development Department for research and development of procedures and methods of project appraisal, under the direction of Mr B. D. Clark.

Birmingham

Plant biology—Dr G. G. Henshaw—£26,409 from the Ministry of Overseas Development for a study of culture tissue research.
Physics—Professor G. C. Morrison—£78,330 from the SRC for research into heavy ion transfer reactions.
Geological sciences—Dr J. W. Lloyd—£20,215 from the Natural Environment Research Council for the measurement and interpretation of stable isotope levels in precipitation recharge waters and modern ground waters.
Microbiology—Professor H. Smith—£26,443 from the MRC to study the determinants of resistance of *candida albicans* to humoral and cellular non-specific defences.
Experimental pathology—Dr D. R. Stanworth—£108,180 from the National Research Development Corporation for an immunological inhibitors project.
Mechanical engineering—Professor S. A. Tobias—£184,550 from the SRC for research in metal forming and associated areas; Professor J. W. Railly—£20,743 for a study of anomalous rotating stall characteristics.
Psychiatry—Professor W. H. Trethowan—£94,000 from the Department of Health and Social Security for an evaluation of Worcester Development project.

Leeds

Social policy and administration—£48,388 from the Department of Health and Social Security for a comparative study of assisted lodgings for the elderly, under the direction of Professor J. Greve.
Biophysics—£25,175 from the Yorkshire Cancer Research Campaign for research into the design of drugs for use in chemotherapy under the direction of Professor A. C. T. North.
Genetics—£31,260 from the SRC for a project on the effect of light on the development of physcomitrella patents under the direction of Professor D. J. Cove.
Plant sciences—£17,745 from the Water Research Centre for research into sewage sludges as sources of plant nutrients under the direction of Mr W. N. Townsend.
Mechanical engineering—£31,650 from the SRC for a project on ferrographic study of piston ring/materials, polymers, natural and artificial synovial joints under the direction of Professor D. Dowson.
Radiotherapy—£53,000 (renewal) from the Yorkshire Cancer Research Campaign for the purchase of equipment and maintenance under the direction of Professor C. A. F. Joslin.

Liverpool

Department of metallurgy and materials sciences—Professor D. Hull—£89,200 from the SRC in support of research into failure criteria testing and design of composites.
Physics—Dr W. H. Evans—£408,035 and £10,374 from the SRC in support of film analysis 1978-81.
Inorganic, physical and industrial chemistry—Professor C. H. Bamford and Professor A. Ledwith—£34,083 from ICL Ltd in support of their research into polymeric structures with biocidal activity.

Appointm

Universities

Oxford

Halley lecturer: Anth
Cherwell-Simon memori
Sir Rudolf Peierls.
Richard Browning
Graham Johnston Shipley.

Southampton

Academic registrar: Mr
Readers: Dr A. F. W.
Dr R. A. Farrar (mecha
ing). Lecturers: S. J.
neology); K. M. Sharp
G. M. Blue (language
Mason (geography); Dr
(oceanography); C. K.
engineering); W. R. Jones
cation); Dr C. Barbalis
C. M. Taylor (primary
N. R. Dennis (child he
Hughes (psychiatry).

Stirling

Deputy principal of
fessor Duncan Timms.

Wales

Senior lecturer: Dr D.
graphy). Lecturers:
(geography); A.
studies); N. W. C. Wood
mics); R. Young (archae
porary lecturer: Dr
(classics). Assistant libra
Jones.

Polytechnics

Teesside

The head of computer
been appointed to the
assistant director (designa
polytechnic merges with
of Education in Septemb

Open University programmes August 5 to 11

Saturday August 5

BBC 1
7.15 Complex analysis: Analytic Functions (M332; prog 8).
7.40 Industrial relations: "Bloody Good Colliers" (P881; prog 3).
8.05 The nineteenth century novel and its legacy: The Novel and TV (2) (A302; prog 12).

BBC 2
7.40 The early Roman Empire and the rise of Christianity: The Establishment in Britain (A291; prog 6).
8.05 Technology foundation course: The Heart of Computers (T100; prog 13).
8.30* Arts foundation course: Victorian Mural Paintings (A101; prog 23).
8.55* Cognitive psychology: Learning Strategy; Teaching Style (D303; prog 11).
9.20* Control of technology: Alternative Technology Centre (T361; prog 6).
9.45 Great Britain 1750-1950: sources and historiography: Slum Clearance in the Thirties (A401; prog 10).
10.10 Art and environment: Community Theatre (TAD292; prog 0).
10.35* An introduction to materials: Car Body (1) (TS251; prog 13).
11.05* Physiology of cells and organisms: Physiological Adaption (S321; prog 12).
11.25* The nature of chemistry: The G.C./M.S. Link-up (S304; prog 21).
11.50* Telecommunication systems: Television (T321; prog 11).
12.15 Mass communication and society: Organising (DE353; prog 11).
12.40 Man's religious quest: Aladura: The Praying People (AD208; prog 12).
13.05* Social work, community work and society: Black and British (DE206; prog 16).
13.30 Electromagnetics and electronics: Design Study 1: Power Amplifier—The Output Stage (TS283; prog 13).
13.55 Fundamentals of human geography: Coal Power (D201; prog 13).
14.20 Genes and development: Genes and Development (S2-5; prog 1).

RADIO 3 (VHF)
6.00 Computing and computers: Systems Analysis and Design (PM951; prog 9).
6.20* Urban development: Crime in Chicago—The Pattern of Juvenile Delinquency (DT201; prog 23).
6.40 The age of revolutions: Delacroix, Berlioz and Paganini (A202; prog 24).
7.00 Technology foundation course: Computer Security (T100; prog 11).
7.20* Arts foundation course: Economics and Techniques of Art Distribution in Victorian England (A101; prog 23).
7.40* Mathematics foundation course: Foundation Maths 12 (M101; prog 12).

RADIO 4 (VHF)
Not on north Scottish and Welsh transmitters
9.05 Open Forum—35.
9.20 English urban history 1500-1780: Pestilence and Poverty: The Great Plague of London of 1665 (A322; prog 6).
9.40* Earth science topics and methods: Reflected Light Microscopy (S333; prog 6).
10.00 Schooling and society: The Intelligence Testing Movement (E202; prog 12).
10.20 Social work, community work and society: A Social Work Defence (DE206; prog 13).
10.40 Thought and reality: central themes in Wittgenstein's philosophy: The Privacy of Sensations (A402; prog 13).
11.00* Mass communication and society: The James Bond Formula (DE353; prog 19).
11.20* Modern art from 1848 to the present: styles and social implications: Modern Art and Everyday Design (A351; prog 12).
11.40* The nineteenth-century novel and its legacy: American Innocence (A302; prog 12).
14.00 Renaissance and reformation: Calvin and the Cardinal (A201; prog 24). Reformation studies: Calvin and the Cardinal (PA981; prog 5).
14.20* Economics and education policy: The price of education (ED322; prog 6).
14.40* Personality and learning: Creole Dialect (E201; prog 25).
15.00 Patterns of inequality: Political Independence and India: Continuity (D302; prog 24).
15.20* Curriculum design and development: The National Geography Project (E203; prog 17).
15.40* Decision making in British education systems: How Free is the Head? (E221; prog 12).
16.00* Food production systems: Agriculture and Development in East Africa (1) (T273; prog 6).
16.20 The handicapped person in the community: Work Preparation and Further Education (PD251; prog 8).
16.40* People and organizations: Army (1) (DT352; prog 5).

RADIO 3 (VHF)
Alternative broadcasts for north Scottish and Welsh transmitters
24.00* Schooling and society: The Intelligence Testing Movement (E202; prog 12).
00.20* Earth science topics and methods: Reflected Light Microscopy (S333; prog 6).
00.45* English urban history 1500-1780: Pestilence and Poverty: The Great Plague of London of 1665 (A322; prog 6).

Sunday August 6

BBC 1
7.15 Systems performance: human factors and systems failures. Earthquakes and Technology (TD342; prog 10).
7.40 Geochemistry: Chemistry of Rocks (S2-3; prog 1).
8.05 War and Society: The Resistance (A301; prog 12).

BBC 2
7.40 Making sense of society: Cargo Cults (D101; prog 31).
8.05 Science foundation course: Major Features of the Earth's Surface (S100; prog 24).
8.30 Mathematics foundation course: Complex Numbers (M101; prog 26).
8.55 Analysis: Integration (M231; prog 8).
9.20* Modelling by mathematics: Integrating for Oil (TM281; prog 7).
9.45* Electromagnetics and electronics. Design Study 1: Power Amplifier—The Output Stage (TS283; prog 13).
10.10 Topics in pure mathematics: A Relational Approach to Square 3 (M203; prog 24).
10.35 Statistical sources: Crossing the River Thames (D291; prog 6).
11.00 The sociological perspective: Secularization (D283; prog 8).
11.25* Open Forum 33: Making the Best Use of Summer School.
11.50 Mechanics and applied calculus: Fourier Series (MST282; prog 13).
12.15 History of mathematics: New Worlds from Old (AM289; prog 8).
12.40* Historical data and the social sciences: Demographic Crisis (D301; prog 3).
13.05 Management in education. Autonomy: The Nelson Touch (E321; prog 6).
13.30 Soviet government and politics. The Soviet Union: An Impression (D335; prog 6).

RADIO 3 (VHF)
6.00* Renaissance and reformation: Calvin and the Cardinal. Reformation studies: Calvin and the Cardinal (A201; prog 21. PA981; prog 5).
6.20* The nature of chemistry: Application of Mass Spectroscopy (S304; prog 11).
6.40* Decision making in British education systems: How Free is the Head? (E221; prog 12).
7.00 Making sense of society: Cargo Cults (D101; prog 24).
7.20 Science foundation course Review (S100; prog 24).
7.45 Open Forum—35.

RADIO 4 (VHF)
9.10 The revolutions of 1848: Verdi and 1848 (A321; prog 12).
9.30 The early Roman Empire and the rise of Christianity: The Britons under Rome (A291; prog 12).
9.50 Great Britain 1750-1950: sources and historiography, 1945: A New Elite (A401; prog 13).
10.10 Science and belief: from Copernicus to Darwin Vitalism and the Organic Chemists (AMST283; prog 8).

RADIO 3 (VHF)
24.00 History of architecture and design 1890-1939. Project Case Study: 66 Frognal, Part 2 (A305; prog 24).
00.20 Drama: Shaw and the New Spirit (A307; prog 16).
00.40 The development of instruments and their music. Twentieth Century Music: Extracts (1) (A304; prog 12).

Monday August 7

BBC 1
6.40 Urban development: An Overview (DT201; prog 18).
7.05 Curriculum design and development: Curriculum Innovation (E203; prog 12).
7.30* Mechanics and applied calculus: Fourier Series (MST282; prog 13).

BBC 2
6.40 Systems performance: human factors and systems failures. Earthquake Prediction and Prevention (TD342; prog 11).
7.05* Complex analysis: Analytic Functions (M332; prog 8).
7.30 Ecology: Ants and Acacias (S323; prog 11).
16.55* The early Roman Empire and the rise of Christianity: The Establishment in Britain (A291; prog 6).
17.20 Environment: Properties of Water (S2-3; prog 1).
17.45 Linear mathematics: Rigid Transformations (M201; prog 21).
18.10 Mathematics foundation course: Complex Numbers (M101; prog 26).
18.35* Technology foundation course: The Heart of Computers (T100; prog 13).

RADIO 3 (VHF)
6.00 Control of technology: Community Technology: The Washington Soap Factory (T361; prog 6).
6.20 Genetics: The Biometrical Approach (S299; prog 11).
6.40* English urban history 1500-1780. Pestilence and Poverty: The Great Plague of London of 1665 (A322; prog 6).
17.45 People and organizations: Army (1) (DT352; prog 5).
18.05 Microeconomics: Investment Appraisal (D323; prog 14).
18.25 Topics in pure mathematics: Factorization (M203; prog 13).
18.45 The sociological perspective: Rationalisation and Secularization (D283; prog 12).
19.05 Open University Announcements/Music Fill.
19.10* Making sense of society: Cargo Cults (D101; prog 24).

Alternative broadcasts for north Scottish and Welsh transmitters
24.00 Economics and education policy: The Price of Education (ED322; prog 6).
00.20* Modern art from 1848 to the present: styles and social implications. Modern Art and Everyday Design (A351; prog 12).

Tuesday August 8

BBC 1
6.40* The nineteenth-century novel and its legacy: The Novel and T.V. (2) (A302; prog 12).
7.05* War and society: The Resistance (A301; prog 12).
7.30 Images and information: The Surface of Mars: A Case Study (ST291; prog 12).

BBC 2
6.40 Fundamentals of statistical inference: Weights, Measures and Statistics (M341; prog 6).
7.05* Genes and development: Genes and Development (S2-5; prog 1).
7.30 Numerical computation: Cubic Splines: Road Design Case Study (M351; prog 6).
16.55 Schooling and society: Rhondda 3: A Community in Search of Itself (E202; prog 8).
17.20 Decision making in Britain: "Out of Sight—Out of Mind"? (D203; prog 11).
17.45 Social work, community work and society: Community on Probation (DE206; prog 10).
18.10 The age of revolutions: Ingres (A202; prog 12).
18.35* Science foundation course: Major Features of the Earth's Surface (S100; prog 24).

RADIO 3 (VHF)
6.00 Cognitive psychology: The Perceptive Computer (D303; prog 8).
6.20* Schooling and society: The Intelligence Testing Movement (E202; prog 12).
6.40* Social work, community work and society: A Social Work Defence (DE206; prog 13).
17.45 Biochemistry and molecular biology: Basic Concepts in Immunology (S322; prog 12).
18.05 An introduction to psychology: The Structure of Meaning (D305; prog 12).
18.25 The digital computer: Computers and People (TM221; prog
18.45 Materials under stress: Stress Corrosion (TS51; prog 6).
19.05 OU Announcements/Music Fill.
19.10 Arts foundation course: Marx, Engels and Manchester (A101; prog 24).

Alternative broadcasts for north Scottish and Welsh transmitters
24.00* Personality and learning: Creole Dialect (E201; prog 25).
00.20* Renaissance and reformation: Calvin and the Cardinal (A201; prog 24). Reformation studies: Calvin and the Cardinal (PA981; prog 5).
00.40* Mass communication and society: The James Bond Formula (DE353; prog 19).

Wednesday August 9

BBC 1
6.40* Fundamentals of human geography: Coal Power (D201; prog 13).
7.05* Linear mathematics: Rigid Transformations (M201; prog 21).

BBC 2
6.40 Materials under stress: Design for Life (T351; prog 11).
7.05 The nature of chemistry: Organosilicon Compounds (S304; prog 23).
7.30 History of architecture and design 1890-1939: Edwin Lutyens: Deanery Gardens (A305; prog 18).
10.55 Curriculum design and development: Curriculum Innovation (E203; prog 12).
17.20* Oceanography: North Sea Case Study (S334; prog 11).
17.45* Images and information: The Surface of Mars: A Case Study (ST291; prog 12).
18.10 Genetics: Heterosis (S299; prog 13).
18.35 Arts foundation course: Industrial Landscape: The Yorkshire Woollen Industry (A101; prog 21).

RADIO 3 (VHF)
6.00* People and work: A Professional Hospital Setting (DE351; prog 11).
6.20* The handicapped person in the community: Work Preparation and Further Education (PD251; prog 8).
6.40 Twentieth-century poetry: "Just Wink as you Depart"—W. H. Auden and Light Verse (A306; prog 12).
17.45 Urban development: Social Perception and Housing (Chicago) (DT201; prog 21).
18.05 Education, economy and politics: Policies, Authority and Attainment (E353; prog 7).
18.25 Decision making in Britain: The Public Health Inspector (D203; prog 16).
18.45 Second-level Science: Heritability and IQ Scores (S2-Biol; prog 8).
19.05 OU Announcements/Music Fill.
19.10 Complex analysis: Uniform Convergence (M332; prog 6).

Alternative broadcasts for north Scottish and Welsh transmitters
24.00* Genetics: The Biometrical Approach (S299; prog 11).
00.20* Curriculum design and development: The National Geography Project (E203; prog 17).
00.40* Patterns of inequality: Political Independence and India: Continuity (D302; prog 24).

Thursday August 10

BBC 1
6.40 Introduction to engineering mechanics: The Laws of Thermodynamics: Part II (T231; prog 11).
7.05* Geochemistry: Chemistry of Rocks (S2-3; prog 1).
7.30 Earth science topics and methods: Porphyry Copper Deposits (S333; prog 12).

BBC 2
6.40* Mass communication and society: Organising (DE353; prog 11).
7.05* Man's religious quest: Aladura: The Praying People (AD208; prog 12).
7.30* Schooling and Society: Rhondda 3: A Community in Search of Itself (E202; prog 8).
18.35* Making Sense of Society: Cargo Cults (D101; prog 24).

RADIO 3 (VHF)
6.00* Thought and reality: central themes in Wittgenstein's philosophy: The Privacy of Sensations (A402; prog 13).
6.20 Social Psychology: Social Skills: An Introduction (D305; prog 12).
6.40 Personality and learning: Cultural Bias in Children's Books (E201; prog 24).
17.45* Computing and Computers: Systems Analysis and Design (PM951; prog 9).
18.05 Management in Education: The Framework of Law (E321; prog 9).
18.25 An Algorithmic Approach to Computing: Filing Systems (M251; prog 6).
18.45 Physiology of Cells and Organisms: Pituitary Function in Parturition (S321; prog 6).
19.05 OU Announcements/Music Fill.
19.10* Technology foundation course: Computer Security (T100; prog 14).

Alternative broadcasts for north Scottish and Welsh transmitters
24.00 Twentieth Century Poetry: "Just Wink as you Depart"—W. H. Auden and Light Verse (A306; prog 12).
00.20* Social Work, Community Work and Society: A Social Work Defense (DE206; prog 13).
00.40* Open Forum—35.

Friday August 11

BBC 1
6.40* The age of revolu
(A202; prog 13).
7.05* Environment: Propertie
(S2-3; prog 1).
7.30* Genetics: Heterosis (S2

BBC 2
6.40 Economics and educ
Finance in Education
7.05* Decision making in Brit
Sight—Out of Mind"
11).
7.30* Social work, comm
society: Community
(DE206; prog 10).
18.35* Introduction to engi
anics: The Laws of
Part II (T231; prog 11)

RADIO 3 (VHF)
6.00 Curriculum design and
Portrait of Countesthorpe
(E203; prog 18).
6.20* Patterns of inequality
Independence and India
(D302; prog 24).
6.40* Drama: Shaw and the Ne
(A307; prog 16).
17.45* The age of revolutions
Berlioz and Paganini (A20
24).
18.05 Statistical sources: Cross
Investment (D291; prog 6).
18.25 History of architecture
1890-1939: Frank Pick (A30
25).
18.45 Mechanics and Applied
ing Problems (MST282; pro
19.05* Science foundation course
(S100; prog 24).

Alternative broadcasts for north S
Welsh transmitters
24.00 Environmental control and
health: Noises while
(T273; prog 13).
00.20* The handicapped person in the
munity: Work Preparation and
ther Education (PD251; prog
00.40 Control of technology:
Technology: The Washington
Factory (T361; prog 6).

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THE PAPUA NEW GUINEA
UNIVERSITY OF TECHNOLOGY

plications are invited for the following Technical posi-
ns with the Papua New Guinea University of Techno-
y:

Technical Officer grade 2
Central Electronics Workshop

the Department of Electrical and Communication
ngineering

pplicants for this post must have had experience in ser-
cing the following types of equipment: video equip-
ent both black-and-white and colour, spectrophoto-
eters, electronic furnaces, V.H.F. telecommunications
equipment, applied instrumentation, and general control
ear. Duties will include establishing maintenance
ecords and procedures and some on-the-job training
of national staff.

Applicants must hold electrical certificate from a recog-
nised Technical School or College.

Technical Officer grade 1-2
Department of Accountancy and Business Studies

Applicants for this post are expected to have had experi-
ence in the maintenance and the operation of all types
of business machines ranging from a manual adding
machine to a ledger machine.
Duties will be to maintain and demonstrate the account-
ing and calculating machines and other office equipment.
The successful applicant will be directly responsible to
the Senior Technical Officer.
SALARY: Technical Officer Grade 1 K9,021x8-K11,065
Technical Officer Grade 2 K11,359x3-K12,001
Allowances additional to salary are payable as follows:
married K2,300 per annum. Single K1,300 per annum.
In certain circumstances a child allowance of K156 per
annum is also payable. An educational allowance and
additional fares may be provided for children being edu-
cated away from their parents' place of residence. Other
benefits include furnished housing (hard goods only)
supplied at nominal rental, leave fares to place of recruit-
ment every second year and equivalent fares to Can-
berra, Australia, each alternate year and six weeks' annual
leave. Superannuation benefits apply in most circum-
stances.
Appointment will be on a contract basis for a maximum
of two years in the first instance. The successful appli-
cants would be expected to take up their appointments in
early January, 1979.
Applications in duplicate should include particulars of
age, nationality, marital status, family (if any), qualifica-
tions, experience, present post and the names of three
referees from whom confidential enquiries may be made.
Applications are required by 14 August, 1978, and should
be sent to The Registrar, The Papua New Guinea Uni-
versity of Technology, P.O. Box 793, LAE, PAPUA NEW
GUINEA.
An additional copy of application should be sent to A.C.U.
Appointments, 36 Gordon Square, London WC1H 0PF.

THE UNIVERSITY OF LEEDS
AND THE
HANSARD SOCIETY FOR PARLIAMENTARY GOVERNMENT

Applications are invited for two temporary fixed-term posts in a
two-year research project on the broadcasting of the proceedings
of Parliament. The study is financed by the SSRC, and will be
directed by Professor Jay G Blumler of the University of Leeds
Centre for Television Research.
RESEARCH OFFICER, based in London, to investigate how parlia-
mentary broadcasting is organised by the BBC and the Independent
Broadcasting system. Experience of elite interviewing and/or
institutional analysis in the political science, sociological or mass
media fields will be advantageous.
Initial salary in the range of £3,660-£4,834 of the 1A Scale for Research
and Analogous Staff (£3,660-£6,178) (under review) including London
Weighting.
RESEARCH ASSISTANT, based in Leeds, to analyse the content of
parliamentary broadcasting. Computing and/or statistical expertise
would be advantageous.
Initial salary in the range £3,189-£4,130 of the 1B Scale for Research
and Analogous Staff (£3,189-£4,601) (under review).
Starting date: 1 October, 1978, or later.
Application forms and further particulars may be obtained from the
Registrar, The University, Leeds LS2 9JT, quoting reference num-
ber 125/7/DO. Closing date for applications 25 August, 1978.

THE PAPUA NEW GUINEA
UNIVERSITY OF TECHNOLOGY
Department of Civil Engineering

Senior Technical Officer

A Senior Technical Officer is required to work in the Hydraulics Laboratory of the Department of Civil Engineering.
DUTIES: The successful applicant will be responsible to the Head of Department for the operation and maintenance of the Laboratory. He should have previous experience in Hydraulics Laboratory and preferably some experience in assisting with research.
SALARY: K12,344-K12,992. K1.00=£stg. 0.75 or $A1.22.
Various allowances additional to salary are also payable. The total contract package is under review, but currently includes an overseas allowance (K1,300 single, K2,300 married) and child allowances, while reunion fares and school fees may also be provided for children being educated away from parents' place of residence. Other benefits include appointment, repatriation and recreation fares and furnished housing (hard goods only) at low rental.
Superannuation benefits are applicable in most circumstances.
The appointment will be on a contract basis for two years in the first instance.
Applications should include particulars of age, nationality, marital status, family (if any), qualifications (including certifying documents), experience, and the names and addresses of three referees from whom confidential enquiries can be made.
Applications are required by 28 August, 1978, and should be sent to The Registrar, The Papua New Guinea University of Technology, P.O. Box 793, LAE, PAPUA NEW GUINEA. A copy of application should be sent to the Association of Commonwealth Universities (Appts), 36 Gordon Sqare, London WC1H 0PF.

UNIVERSITY
OF NAIROBI
KENYA

Applications are invited for the post of LECTURER IN CHEMISTRY. Applicants should have a Ph.D. in Chemistry and preferably some post doctoral teaching or research experience. The appointee should be a specialist in either Organic Chemistry, any area, or Inorganic Chemistry. The Inorganic Chemist should be an expert in any of the following areas: Nuclear, Radiation and Radiochemistry, Crystallography, Physical Analytical Chemistry. Salary scale K£2,016-K£3,312 p.a. (K£=£1.37 sterling). The British Government may supplement salary in range £3,756-£4,200 p.a. (sterling) for married appointee or £2,430-£2,778 p.a. (sterling) for single appointee (reviewed annually and normally free of all tax) and provide children's education allowances and holiday visit passages. Family passages; non-contributory medical scheme; SSSF or FSSU; housing allowance. Detailed applications (two copies) with curriculum vitae and naming three referees to be sent to Registrar (Recruitment and Training), University of Nairobi, PO Box 30197, Nairobi, Kenya by 31 August, 1978. Applicants resident in the UK should also send one copy to Inter-University Council, 90/91 Tottenham Court Road, London W1P 0DT. Further details may be obtained from either address.

HERIOT-WATT
UNIVERSITY

CHAIR OF BUSINESS LAW

Applications are invited from suitably qualified persons for a full-time appointment to the newly created Professorship in Business Law within the Department of Business Organisation.
Applicants should have good professional as well as academic qualifications (preferably in Scots Law) and practical experience of commercial legal matters in finance, industry or commerce.
The recently introduced degree in Business Law is in response to the needs and demands of a technological university and concentrates on national and international legal and related studies in commerce, industry and local government. There is no intention to promote a degree structure to permit direct entry into either branch of the legal profession.
Further particulars and form of application are obtainable from the Staff Officer, Heriot-Watt University, Chambers Street, Edinburgh, and should be returned by 31st August, 1978.

ABERYSTWYTH
THE UNIVERSITY COLLEGE OF WALES
DEPARTMENT OF ZOOLOGY

Applications invited for the post of JUNIOR RESEARCH ASSISTANT in MARINE BIOLOGY, in the Department of Zoology. Applicants should have a 1st or 2A class Honours degree in Zoology. The successful candidates will pursue research studies for a higher degree. The salary will be £1,766 per annum (to be reviewed in the light of increases in postgraduate student awards).

Application forms and further information may be obtained from the Registrar, University College of Wales, Aberystwyth. Closing date 28th August, 1978.

UNIVERSITY OF
CAPE TOWN

DIRECTOR OF EXTRA-MURAL STUDIES/
PROFESSOR OF ADULT EDUCATION OR
DIRECTOR OF EXTRA-MURAL STUDIES

Applications are invited for the above post (vacant from October 1, 1978) from persons with high academic qualifications, wide-ranging interests, and experience in teaching, administration and research. The successful candidate for the post of Director (which carries academic status and membership of the University Senate) will have academic and administrative responsibility for the work of the Centre of Extra-Mural Studies, will also be expected to undertake and supervise research, and may be required to teach in the field of Adult Education. If appointed a Professor (dependent on qualifications), he will also be responsible for the teaching of Adult Education in the Faculty of Education.
Appointment will be made, according to qualifications and experience, on the salary scale R10,800 x 450-12,600 x 600-13,800+15.5% for Director/Professor: for Director only R9,900 x 450-12,600/x 600-13,800 plus 15.5% per annum.
Applicants should submit a curriculum vitae, stating present salary, teaching, administrative and research experience, interests and publications, when duty could be assumed and the names and addresses of three referees. Further information should be obtained from the Registrar, Room 10, University of Cape Town, Private Bag, Rondebosch, 7700. Closing date for applications is 18th September, 1978, but late applications may be considered.
The University's policy is not to discriminate in the appointment of staff or the selection of students on the grounds of sex, race, religion or colour. Further information on the implementation of this policy is obtainable from the Registrar.

ABERDEEN
THE UNIVERSITY
DEPARTMENT OF NATURAL PHILOSOPHY
SENIOR LECTURESHIP

Applications are invited for a SENIOR LECTURESHIP in the Department of Natural Philosophy from candidates well qualified for research and undergraduate teaching in theoretical physics. The successful applicant will be expected to take up his or her duties as soon as convenient and not later than 1 October, 1979.

Salary on scale £7,074-£8,430 per annum, with appropriate placing.

Further particulars from The Secretary, The University, Aberdeen, with whom applications (2 copies) should be lodged by 1 October, 1978.

ABERYSTWYTH
THE UNIVERSITY COLLEGE OF WALES
DEPARTMENT OF AGRICULTURAL BOTANY

Applications are invited for the post of DEMONSTRATOR, fixed term appointment from 1 October, 1978.

Salary on 1B scale, commencing £3,189 per annum (under review).

Application forms and particulars obtainable from the Registrar, Old College, Aberystwyth. Closing date for applications: 25 August.

UNIVERSITY OF MALAWI
The Polytechnic

Applications are invited for the following posts in the DEPARTMENT OF ENGINEERING:

1. SENIOR LECTURER/LECTURER IN MECHANICAL ENGINEERING
2. SENIOR LECTURER IN ELECTRICAL ENGINEERING
3. LECTURER IN CIVIL ENGINEERING

Applicants must have at least a good honours degree in the appropriate subject from a recognised institution or equivalent professional qualification and at least five years of industrial experience. Previous teaching and experience in a developing country would be an advantage at lecturer level and essential at senior lecturer level. Appointees will be required to teach up to the diploma level and assist in developing a degree programme in engineering.
Salary scales: Senior Lecturer K6,500-K8,000 p.a. Lecturer K3,500-K6,600 p.a. (£1 sterling = K1.57). The British Government may supplement salaries in range £3,450-£4,128 p.a. (sterling) for married appointees and £2,340-£2,976 p.a. (sterling) for single appointees (reviewed annually and normally free of all tax) and provide children's education allowances and holiday visit passages. If no British Government Supplement available, the University may pay an addition of between K1,320-K1,656 p.a. for Lecturer and between K1,640-K1,800 p.a. for Senior Lecturer (taxable in Malawi). Family passages; superannuation scheme: gratuity 15%-25%: biennial overseas leave: housing and various allowances.
Detailed applications (two copies) with curriculum vitae and naming three referees to be sent to Registrar, University of Malawi, P.O. Box 278, Zomba, Malawi, by 4 September, 1978. Applicants resident in the UK should send one copy to Inter-University Council, 90/91 Tottenham Court Road, London W1P 0DT. Further details can be obtained from either address.

UNIVERSITY COLLEGE DUBLIN
DEPARTMENT OF MECHANICAL ENGINEERING
APPOINTMENT IN

AGRICULTURAL ENGINEERING

Applications are invited for an academic appointment in Agricultural Engineering. The appointment will be made at the level of either Assistant Lecturer or College Lecturer. Candidates should have a good Honours Degree in Engineering, preferably Agricultural Engineering or the equivalent. A higher degree and experience in research are desirable qualifications. Applicants should preferably have interest and experience in the application of Engineering to Agricultural Production or Processing.
The salary scales are:
Assistant Lecturer: £4,127—£5,740
College Lecturer: £6,460—£8,320
Entry point on the relevant scale will be in accordance with qualifications and experience. There is a non-contributory pension scheme.
Prior to application, further information (including application procedure) should be obtained from the Secretary and Bursar, University College, Belfield, Dublin 4. Telephone enquiries 693244, Ext. 431.
The latest date for receipt of completed applications is THURSDAY, 14th SEPTEMBER, 1978.

Universities continued

THE UNIVERSITY OF LEEDS

DEPARTMENT OF BIOCHEMISTRY

Applications are invited for a post of **POSTDOCTORAL RESEARCH FELLOW**, on a project financed by the MRC. The project, under the supervision of Dr S B Brown, will involve the use of abnormal haemoglobins in a study of haem degradation both in vivo and in vitro. The post is available from 1 October, 1978, or as soon as possible thereafter for a fixed period of three years. Applications will be welcomed from those who expect to gain the appropriate qualifications in the near future.

Salary on the IA Scale for Research and Analogous Staff £3,660-£6,178 (under review).

Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference number 03/15. Closing date for applications 21 August, 1978.

BIRMINGHAM

THE UNIVERSITY

UNIVERSITY OF ZAMBIA (Re-advertisement)

HOME-BASE LECTURESHIP IN DEVELOPMENT ADMINISTRATION AND MANAGEMENT STUDIES

Applications are invited for the post of Lecturer for a period of three years to teach in two of the following fields: the Administration of Urban and Rural Development; Comparative Local Government; Financial Management; Personnel Management; Public Enterprise Management.

The first two years of the appointment will be spent in the Department of Political and Administrative Studies at the University of Zambia and the final year at the Institute of Local Government Studies at the University of Birmingham. The appointment will be supported by the Inter University Council under its scheme for home-based posts.

Applicants should possess a good honours degree in an appropriate discipline and postgraduate experience including teaching in an overseas institution of higher learning or relevant operational work in a third world country.

The salary at the University of Zambia will be in the scale Kwacha [illegible] (£1 equals approximately Kwacha 1.45). The British Government may supplement the salary in the range £2,290 to £2,988 for married appointees or £330 to £834 for single appointees (normally free of all tax) and provide children's educational allowances and holiday visit passages where appropriate. The supplementation rates are currently under review. Family passages and various other benefits are also provided.

The salary at Birmingham will be within the Lecturer scale, £3,660 to £7,308 plus superannuation.

Further particulars and application form from the Assistant Registrar (Commerce), University of Birmingham, P.O. Box 363, Birmingham, B15 2TT, to whom the form, naming three referees, should be returned by Friday, 25th August, 1978, quoting reference C/20/A/RR.

BIRMINGHAM

THE UNIVERSITY

FACULTY OF COMMERCE AND SOCIAL SCIENCE

DIRECTOR OF THE WATER INDUSTRY MANAGEMENT CENTRE

Applications are invited for appointment, as soon as possible, to the post of Director of this multi-disciplinary Centre, which undertakes training for members of the industry and research into and documentation of problems of water resources management. The Director should have a background in an appropriate academic discipline (e.g., Economics, Finance, Operational Research, Organisation Behaviour) and should be familiar with problems of management.

The appointment will be for a five-year period at Senior Lecturer level (currently £7,074 to £8,730 per annum plus superannuation). Consideration may also be given to the possibility of an appointment on secondment for a [illegible] period.

Further particulars and application form from the Assistant Registrar (Commerce), University of Birmingham, P.O. Box 363, Birmingham B15 2TT, to whom the form naming three referees, should be returned by Friday, 25th August, 1978, quoting reference C/20/RR.

BRUNEL

THE UNIVERSITY

ADMINISTRATIVE ASSISTANT IA (Temporary: one year)

Applications are invited from Graduates for a temporary Administrative Assistant to work in the Secretary General's office on the [illegible] of University procedures arising from a Working Party of Senate.

The post is tenable for one year from as soon as possible.

Salary: on the Administrative IA Scale, £3,314 to £6,178 plus £450 London Allowance.

Write for application form to the Assistant Secretary (Establishment), Brunel University, Uxbridge, Middlesex, UB8 3PH, or telephone Uxbridge 37188 extension 30. Closing date: August 18, 1978.

BRISTOL

THE UNIVERSITY

RESEARCH ASSISTANT IN COMPUTING

Applications are invited from candidates with suitable computing experience for the post of Research Assistant with special reference to Computing in the Department of Geography. A first degree in geography or closely related field would be an advantage but not a necessity, and applications from candidates with initial qualifications in mathematics, computer science, or related fields are welcomed.

Salary on scale £3,189 to £[illegible] per annum according to age, qualifications and experience.

Further particulars may be obtained from the Registrar and Secretary, University of Bristol, Senate House, Bristol BS8 1TH, to whom applications, including the names of two referees, should be sent by 1st September, 1978. (Please quote reference [illegible].)

BUCKINGHAM

UNIVERSITY COLLEGE

LECTURER IN ECONOMICS OR ECONOMIC HISTORY

The college wishes to appoint as soon as possible a Lecturer, preferably with an interest in International Economics and/or Modern Economic History, to work primarily in the School of Economics (Chairman: Professor Alan Peacock).

Applications from well-qualified younger Economists or Economic Historians wishing to embark on an academic career would be particularly welcomed.

Particulars from Registrar, U.C.B., Buckingham, MK18 1EG.

THE CITY UNIVERSITY

DEPARTMENT OF OPTOMETRY AND VISUAL SCIENCE

LECTURER

Applications are invited from experienced GRADUATES or those with higher professional qualifications. Research interests are essential.

Salary will be on the scale £3,660 to £7,308 per annum (under review) plus £450 London Allowance per annum.

Further particulars and application forms are available from the Deputy Academic Registrar, The City University, St. John Street, London EC1V 4PB (telephone: 01-253 4399 ext. 3[illegible]). Please quote reference 0/317 THES. Closing date: September 11th, 1978.

EAST ANGLIA

THE UNIVERSITY

Norwich

POST-DOCTORAL APPOINTMENT IN METAL CLUSTER CHEMISTRY

SCHOOL OF CHEMICAL SCIENCES

An S.R.C.-financed post-doctoral research post is available to work with Professor S. F. A. Kettle, Dr D. B. Powell and Professor N. Sheppard, F.R.S., on the preparation and infrared and Raman spectroscopy of metal cluster compounds. The post is up to Point 3 of the 1A scale (£3,[illegible] per annum plus U.S.S. and National Insurance as from 1.10.77) for approximately 3 years or at a higher point on that scale for a shorter period.

On the preparative side the main interest of the research group is in cluster compounds with hydrogen ligands (particularly bridged hydrogens), hydrocarbon ligands of simple structure, unusual CO ligands, such as those bonded to 3 or more metal atoms. The principal aim of the work is to characterise such ligands by infrared and Raman spectroscopy and to compare the spectra with those obtained from molecules of similar types absorbed on metal catalyst surfaces.

Applications as soon as possible to Professor N. Sheppard, F.R.S., School of Chemical Sciences, University of East Anglia, Norwich NR4 7TJ, with the names of referees.

EDINBURGH

HERIOT-WATT UNIVERSITY

DEPARTMENT OF COMPUTER SCIENCE

Applications are invited for two posts as LECTURER in the Department of Computer Science.

£3,660-£7,308 p.a.

The successful applicants will be required to take part in the Undergraduate and Postgraduate teaching of the Department and to pursue research. The Undergraduate teaching is principally associated with B.Sc. in Computer Science and B.A. in Accountancy and Computer Science. The Postgraduate teaching is M.Sc. in Software Development and Analysis.

Preference will be given to candidates who have expertise in design and analysis of software (one post) or data base management systems (one post).

Please apply in writing to the Staff Officer, Heriot-Watt University, Chambers Street, Edinburgh EH1 1HX.

ESSEX

THE UNIVERSITY

POSTDOCTORAL/GRADUATE RESEARCH ASSISTANT IN THE DEPARTMENT OF CHEMISTRY

Applications are invited for the post of Research Assistant to work with Dr. R. C. Hider on the development of liposomes suitable for vaccine production and the oral application of drugs. The appointment is for one year tenable from 1st October, 1978. Graduate applicants will be expected to have a good Honours degree in Chemistry or Biochemistry; postdoctoral applicants will be expected to have relevant research experience. Salary scale £3,189 to £3,660 per annum (plus superannuation benefits).

Applications (three copies), including curriculum vitae and the names and addresses of two referees, should reach the Registrar (AC/A/THES), University of Essex, Wivenhoe Park, Colchester CO4 3SQ, from whom further particulars may be obtained by August 25th, 1978.

CANTERBURY

UNIVERSITY OF KENT

FACULTY OF SOCIAL SCIENCES

TWO LECTURERS IN LAW

(readvertisement)

Applications are invited for two posts of Lecturer in Law with effect from 1st October, 1978, or as soon as possible thereafter. Candidates with interests in any area of law are encouraged to apply, though an interest in Property Law, Company Law or Criminal Law would be an advantage.

Salary according to qualifications and experience, will be on the scale £3,660 to £7,308.

Application forms and further particulars may be obtained from Mr J. E. Reilly, Senior Assistant Registrar, The Registry, The University, Canterbury, Kent not later than 8th September 1978. Please quote reference number A2[illegible] 78.

CANTERBURY

UNIVERSITY OF KENT

FACULTY OF SOCIAL SCIENCES

SENIOR LECTURER/READER IN LAW

Applications are invited for a post of Senior Lecturer/Reader in Law with effect from 1st January 1979, or as soon as possible thereafter. Candidates with interests in any area of law are encouraged to apply.

Salary will be on the scale £7,074 to £8,730.

Application forms and further particulars may be obtained from Mr J. E. Reilly, Senior Assistant Registrar, The Registry, The University, Canterbury, Kent, not later than 8th September 1978. Please quote reference number A30 78.

CANTERBURY

UNIVERSITY OF KENT

FACULTY OF SOCIAL SCIENCES

SOCIAL PSYCHOLOGY RESEARCH UNIT

RESEARCH FELLOW

Applications are invited from Social Psychologists and Sociologists for the above appointment from 1st November, 1978, until 30th September, 1980.

The Fellow will work on Professor G. Stephenson's S.S.R.C. Programme Grant "Experimental Social Psychology in Organisations", in particular on the topic of entry into work, and the effect of organizations on individuals.

Salary according to qualifications and experience will be on the lower half of the scale £3,660 to £6,178.

Application forms and further particulars may be obtained from Mr. J. E. Reilly, Senior Assistant Registrar, The Registry, The University, Canterbury, Kent. Completed application forms (three copies) should be returned not later than 30th August. Please quote Reference Number A27 78.

EXETER

THE UNIVERSITY

RESEARCH APPOINTMENTS

ARAB GULF STUDIES

Applications are invited for two research appointments in the general area of Arab Gulf Studies. Candidates should have qualifications and interests in History or in one of the Social Sciences. Tenure will be for two years from October 1, 1978, or some later agreed date.

Initial salary will be on the scale £3,189 to £4,601 per annum.

Further particulars from Miss Doreen Watson, Administrative Assistant (Appointments), University of Exeter, Northcote House, Exeter, EX4 4QJ, to whom applications (three copies) should be sent by September 4, 1978, quoting reference No. 7180.

JOHANNESBURG

UNIVERSITY OF THE WITWATERSRAND

CLIMATOLOGY RESEARCH GROUP

RESEARCH OFFICER/JUNIOR RESEARCH OFFICER

Applications are invited for appointment to the above post in the Climatology Research Group, Department of Geography and Environmental Studies.

Applicants should preferably have at least an Honours degree in Climatology or Meteorology, although persons with backgrounds in Geography, Geophysics, Statistics, Applied Mathematics, etc., will also be considered.

The successful applicant will work on a project relating to changes in the general circulation of the atmosphere and the modelling of recent climatic changes over South Africa.

Since a background in Climatology or Meteorology is not an essential prerequisite, the first task of the appointee will be to acquire sufficient expertise to embark on the project. Opportunities for higher degree work will exist.

Duties are to be assumed as soon as possible. The appointment is for one year in the first instance.

Salary will be in the range R4,800 to R7,800 per annum and will depend on qualifications and experience. In addition an allowance of R500 towards travel will be made in the case of an overseas applicant. (£1=R1.67 approx.).

The University's policy is not to discriminate in the appointment of staff or the selection of students on the grounds of sex, race, religion or colour. Further particulars relating to this practice and further particulars of this post are contained in an information sheet obtainable from the London Representative, University of the Witwatersrand, 278 High Holborn, London, W.C.1, or from the Registrar, University of the Witwatersrand, Jan Smuts Avenue, Johannesburg, South Africa, 2001.

Closing date for applications August 18, 1978.

EXETER

THE UNIVERSITY

INSTITUTE OF POPULATION STUDIES

RESEARCH ASSISTANT

Applications are invited from Social Science GRADUATES to assist Dr. R. Snowden in coordinating the data collected in a 10-county study on the "Patterns and Perception of Menstrual Bleeding". This post is tenable from 11th September, 1978, to 30th June, 1979, at a salary of £3,189 per annum.

Applicants should send a full curriculum vitae, together with the names of two referees to the Director, Institute of Population Studies, Department of Sociology, Higher Hoopern House, Higher Hoopern Lane, Exeter, not later than 11th August, 1978.

HONG KONG

THE UNIVERSITY

CHAIR OF PHILOSOPHY

Applications are invited for the university's first Chair of Philosophy in the Department of Philosophy.

Annual salary (superannuable) will be within the professorial range and not less than HK$[illegible] (£1 equals HK$[illegible] approximately).

Further particulars and application forms may be obtained from the Secretary General, Association of Commonwealth Universities (Appts.), 36 Gordon Square, London WC1H 0PF, or the Assistant Secretary (Recruitment), University of Hong Kong, Hong Kong. Closing date for applications is 1st September 1978.

JOHANNESBURG

UNIVERSITY OF THE WITWATERSRAND

DEPARTMENT OF POLITICAL STUDIES

SENIOR LECTURER/LECTURER

Applications are invited for the above post from persons who should preferably, but not necessarily be competent to teach Political Theory.

The salary range attached to the post is as follows: Senior Lecturer: R10,800-R14,250 per annum; Lecturer: R6,300-R9,150 per annum. In addition a 13% per cent pensionable allowance is payable.

The level of appointment and initial notch will be determined in accordance with the qualifications and experience of the successful applicant. (£1 equals R1.67 approx.)

The University's policy is not to discriminate in the appointment of staff or the selection of students on the grounds of sex, race, religion or colour. Further particulars relating to this practice and further particulars of this post are contained in an information sheet obtainable from the London Representative, University of the Witwatersrand, 278 High Holborn, London, W.C.1, or from the Registrar, University of the Witwatersrand, Jan Smuts Avenue, Johannesburg, South Africa, 2001.

Closing date for applications 18th August, 1978.

KEELE

THE UNIVERSITY

SENIOR TUTOR'S OFFICE

PROGRAMMER/ANALYST

A vacancy exists in the Senior Tutor's office for a Programmer/Analyst to assist with development and implementation of On-line Student Records system. Successful applicant will work in a small team on a wide range of projects.

The system operates using Applications Manager for communications work and Cobol for batch work. Training can be arranged where appropriate but a knowledge of Cobol an advantage.

Salary in range £3,189 to £5,202 per annum with membership of Universities Superannuation Scheme.

Further details and application form from the Registrar, The University, Keele, Staffs ST5 5BG, to whom they should be returned not later than August 14th, 1978.

LONDON

THE UNIVERSITY

INSTITUTE OF LATIN AMERICAN STUDIES

RESEARCH FELLOWSHIP

Applications are invited for a Research Fellowship in Latin American Studies, with particular reference to one of the following disciplines: History, International Relations, Politics, Sociology and Economics.

The salary will be within the range £3,425-£5,283, starting point to be determined by qualifications and experience, plus London Allowance [illegible] superannuation, six weeks leave.

The Fellow will be required to pursue an approved programme of research and to assist in the academic work of the Institute.

Further particulars may be obtained from the Secretary, Institute of Latin American Studies, 31 Tavistock Square, London WC1H 9HA, to whom applications, stating age, qualifications and experience, together with the names of three referees, should be sent not later than 8th September.

LONDON SW7

ROYAL COLLEGE OF ART

Applications are invited from GRADUATES, preferably with previous experience in university administration for the post of ADMINISTRATIVE ASSISTANT in the central administration dealing with a variety of responsibilities including some committee work, publications, internal exhibitions, etc. Salary will be on scale IB £3,630-£5,733 or scale IA £3,630-£6,628 inclusive of the London Allowance, according to experience.

Further particulars and application form from the Assistant Registrar (staff), Royal College of Art, Kensington Gore, London SW7 2EU.

LEEDS

THE UNIVERSITY

OFFICE OF THE BURSAR

Applications are invited for a post of DEPARTMENTAL ASSISTANT in the office of the Bursar. Candidates will be expected to have a good educational background, with a degree or equivalent professional qualification.

Salary on the IB Scale for Administrative Staff, £3,189 to £5,282 (under review).

Further particulars of the post may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference number 117/15. Closing date for applications, 25th August, 1978.

LEEDS

THE UNIVERSITY

DEPARTMENT OF POLITICS

Applications are invited for the CHAIR of POLITICS vacant by the resignation of Professor R. Miliband. The successful candidate will be appointed to the Headship of the Department in the first instance. The salary will be not less than the minimum of the professorial range (£8,[illegible] per annum). The University reserves the right to consider for appointment persons other than those who submit formal applications.

Applications (three copies) stating age, qualifications and experience and naming three referees should reach the Registrar, The University, Leeds LS2 9JT, quoting reference number 51/6/DD, not later than 30th September, 1978. Applicants from overseas may apply in the first instance by cable naming three referees who should preferably be in the United Kingdom.

LEICESTER

THE UNIVERSITY

DEPARTMENT OF GEOGRAPHY

RESEARCH STUDENTSHIP

Applications are invited for an S.S.R.C.-linked studentship for an investigation, under the supervision of Dr. P. R. Mounfield, of the effect on industrial linkage of decline in specialised industrial districts.

Value of the studentship is £1,010 a year plus fees.

Contact Department of Geography, The University, Leicester, LE1 7RH, immediately.

LONDON

THE UNIVERSITY

INSTITUTE OF OPHTHALMOLOGY

SECRETARY OF THE INSTITUTE

Applications are invited from suitably qualified persons with experience to fill the above post on the retirement of the present holder early in 1979. The successful applicant will take up this post on January 1, 1979, and the closing date for applications is August 31, 1978. Salary according to experience in Grade III (£7,824 to £9,180), which includes London Allowance. The Institute is a postgraduate medical school of the University of London and of the British Postgraduate Medical Federation and is associated with Moorfields Eye Hospital.

Application form and further information from The Secretary, Institute of Ophthalmology, Judd Street, London, WC1H 9QS. (Telephone 01-387 9621).

NEWCASTLE UPON TYNE

THE UNIVERSITY

REGISTRAR'S OFFICE

ADMINISTRATIVE ASSISTANT

Applications are invited from graduates, or holders of equivalent professional qualifications, for a post of Administrative Assistant in the Registrar's Office.

The duties of the post will initially be divided between a section of the office which handles applications for admission from potential students and another concerned with a broad range of duties related to the Faculty of Engineering.

Salary at an appropriate point on the Grade IA scale (£3,189-£6,178) according to age, qualifications and experience. Membership of the appropriate University superannuation scheme required.

Further particulars from the Registrar, The University, Newcastle upon Tyne NE1 7RU, with whom applications (5 copies) together with the names and addresses of three referees, should be lodged not later than September 4, 1978. Applications should be marked "Administrative Assistant—Eng." Please quote reference EST/606/THES.

NOTTINGHAM

THE UNIVERSITY

INSTITUTE OF PLANNING STUDIES

RESEARCH FELLOW (Readvertisement)

Applications are invited for the above post to join Professor J. C. Moughtin, Dr. P. Hills and Dr. T. Oc working on a project entitled "Motivations, Aspirations and Perceptions of Environmental Stress in the Inner City". The study is funded by the Department of the Environment as part of the Inner Cities Research Programme.

Applicants should be experienced in social survey based research and should preferably hold a higher degree in social psychology or sociology. The main responsibilities of the Research Fellow will be conceptual development, survey and questionnaire design and analysis. The appointment will be for two years commencing October 1st and will be initially on the scale £3,660-£4,170 plus U.S.S.

Applicants should send a full curriculum vitae by August 18th to Dr. Oc from whom additional details are available at the Institute of Planning Studies, University of Nottingham, Nottingham NG7 2RD. (0602-56101, ext. 3302 or 3077). (Previous applicants need not reapply.)

LONDON

QUEEN MARY COLLEGE (University of London)

ENGLISH DEPARTMENT

Applications are invited for a temporary LECTURESHIP in ENGLISH LITERATURE AFTER 1500. Particular interest in an aspect of the period 1660 to 1832 desirable but not essential.

Salary in lower part of scale £3,660 to £7,308 per annum (under review) plus £450 London Allowance.

Further details and application forms obtainable from the Registrar (TH), Queen Mary College, Mile End Road, London, E1 4NS, to be returned by 25th August.

MANCHESTER

THE UNIVERSITY

INSTITUTE OF SCIENCE AND TECHNOLOGY

DEMONSTRATOR

Applications are invited from either sex for the above post in the Department of Mechanical Engineering, Thermodynamics and Fluid Mechanics Division, for the period 1st October 1978 to 30th September 1980. Duties will involve assistance with teaching and laboratory classes at undergraduate and postgraduate level. Candidates should be suitably qualified with experience of postgraduate research, and a knowledge of computing is essential.

Salary on the scale £3,189 to £4,601 per annum.

Letters of application, including curriculum vitae and quoting reference ME 128/GL should be sent to the Registrar, U.M.I.S.T., P.O. Box 88, Manchester, M60 1QD, as soon as possible.

MANCHESTER

THE UNIVERSITY

ADMINISTRATIVE ASSISTANT

Applications invited from graduates with a first or upper second class Honours degree, and administrative experience, for this post in the Bursar's Department. Salary range per annum £3,189 to £6,178. Superannuation.

Further particulars and application forms (returnable by August 25th) from the Registrar, The University, Manchester M13 9PL. Quote reference: 185/78 THES.

MANCHESTER

THE UNIVERSITY

DEPARTMENT OF CHEMISTRY

EXPERIMENTAL OFFICER

Applications are invited for this post, to assist in investigations on the Thermochemistry of organic and organometallic compounds in collaboration with Dr. H. A. Skinner and Dr. G. Pilcher. Experience with calorimetry is advantageous, but the prime requirement is that the applicant has background experience in the making of accurate physico-chemical measurements.

The appointment is for a period of three years from October 1st, 1978, or as soon as possible thereafter. Initial salary is in the range £3,660 to £4,130 per annum according to qualifications and experience. Superannuation.

Particulars and application forms (returnable by August 31st) from the Registrar, The University, Manchester M13 9PL. Quote reference: 187/78/THES.

OXFORD

THE UNIVERSITY

DIRECTORSHIP OF THE INSTITUTE OF AGRICULTURAL ECONOMICS

The electors intend to proceed to an election to the Directorship of the Institute of Agricultural Economics which is now vacant. The stipend of the director will be £10,305 a year.

Applications (ten copies), naming three referees but without testimonials, should be received not later than 12 October, 1978, by the Acting Registrar, University Offices, Wellington Square, Oxford OX1 2JD, from whom further particulars may be obtained.

The Directorship is open to both men and women.

OXFORD

THE UNIVERSITY

READERSHIP IN FRENCH LITERATURE

The electors intend to proceed to an election to the Readership in French Literature which is now vacant. The stipend of the reader will be on a scale which [illegible] without testimonials, should be received not later than 6th October, 1978, by the Acting Registrar, University Offices, Wellington Square, Oxford OX1 2JD, from whom further particulars may be obtained.

LONDON

THE UNIVERSITY

CHAIR OF GEOLOGY AT THE IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY

The Senate invites applications for a Chair of Geology tenable at the Imperial College of Science and Technology. The Professor appointed will take charge of teaching and research in the fundamental scientific aspects of Geology, be required to provide scientific leadership in the central disciplines of Geology and be expected to participate in developments in the applications of Geology.

Applications (10 copies) must be received not later than 30 November, 1978, by the Academic Registrar (TH), University of London, Senate House, London WC1E 7HU, from whom further particulars should first be obtained.

Universities continued

LIVERPOOL

THE UNIVERSITY

DEPARTMENT OF CIVIL ENGINEERING

Applications are invited for the position of RESEARCH ASSOCIATE/RESEARCH FELLOW to work on a project financed by the Science Research Council concerned with the application of advanced mathematical methods to the analysis and optimum design of several types of civil engineering networks. The position would be suitable for persons with an Operational Research/Mathematics background, preferably with a higher degree and interests in aspects of graphs, networks, systems, optimization, mathematical programming or computation.

The appointment is tenable from 1st October, 1978 or as soon as possible thereafter and is financed for three years at an initial salary of up to £3,800 per annum.

Applications, together with the names of two referees, should be received not later than 22nd August, 1978, by the Registrar, The University, P.O. Box 147, Liverpool, L69 3BX, from whom further particulars may be obtained. Quote Ref: RV/471/THES.

LONDON

THE CITY UNIVERSITY BUSINESS SCHOOL

RESEARCH OFFICER

Applications are invited for the above post in the personnel research unit to work on a project investigating the role and educational needs of the occupational health nurse. This is a joint project being carried out with the Institute of Advanced Nursing Education of the Royal College of Nursing. Candidates should have a good degree in one of the social sciences and be able to show competence in basic skills. Qualifications in occupational psychology or industrial sociology would be an advantage.

The appointment is for three years and will be made as soon as possible. Salary will be on a scale up to a maximum of £5,088 per annum, plus £450 London allowance.

Further particulars and application forms may be obtained from the Deputy Academic Registrar, The City University, St. John Street, London EC1V 4PB. (Telephone: 01-253 4399, ext. 3[illegible].) Please quote reference CUBS 220/THES. Closing date for applications: August 31, 1978.

LONDON

UNIVERSITY OF LONDON

GOLDSMITHS' COLLEGE

New Cross, London SE14 6NW

SCHOOL OF HUMANITIES AND PERFORMING ARTS

ENGLISH DEPARTMENT

Applications are invited for the post of temporary, full-time LECTURER II for one year only (whilst permanent holder is on study leave). The successful candidate will be responsible for teaching at the B.A. honours level in medieval literature.

Salary on scale £3,503 by 10 increments to £7,467 per annum inclusive of London allowance and supplements.

Write for further particulars, enclosing a self-addressed medium-sized envelope, to the Personnel Officer, to whom applications should be sent by August 18, 1978.

SHEFFIELD

THE UNIVERSITY

DEPARTMENT OF METALLURGY

S.R.C. POSTDOCTORAL RESEARCH ASSISTANTSHIP

RAPIDLY QUENCHED SUPERALLOYS

Applications are invited from men and women for a Postdoctoral Research Assistantship to study the influence of very rapid solidification on the structure and properties of nickel-based and other high-temperature alloys, an area which is exciting considerable industrial and academic interest. The applicant would collaborate with Drs. D. H. Warrington, H. Jones and H.A. Davies, together with a well-established group working on a wider programme of research into the structures and properties of rapidly quenched alloys. Tenable for two years.

Starting salary up to £4,150 a year.

Research experience in one or more areas of high temperature alloys, powder consolidation, phase transformations, electron microscopy an advantage.

Applications including curriculum vitae and the names of two referees, to Dr. D. H. Warrington, Department of Metallurgy, The University, Sheffield S1 3JD. Quote ref. R. 162/D1.

ST. ANDREWS

THE UNIVERSITY

DEPARTMENT OF ANATOMY AND EXPERIMENTAL PATHOLOGY

POSTDOCTORAL RESEARCH FELLOW

Applications are invited for a postdoctoral research fellowship, supported by the SHHD, for work on a three-year project undertaken jointly with the Department of Urology, Dundee Royal Infirmary, involving organ culture of human prostatic cancer for predicting hormone and drug sensitivity. The fellowship is tenable from October, 1978, or as soon as possible thereafter.

Initial salary within range £4,170 to £4,601, plus USS.

Applications (two copies) preferably in typescript, including curriculum vitae and names of two referees, should be sent by 1st September, 1978, to the Establishments Officer, The University, College Gate, St. Andrews, Fife, from whom further particulars can be obtained.

LONDON

UNIVERSITY OF LONDON

GOLDSMITHS' COLLEGE

New Cross, London, SE14 6NW

SCHOOL OF SCIENCE AND MATHEMATICS

Mathematics Department

Applications are invited for the post of LECTURER in STATISTICS. The appointment will be made at an appropriate point on the salary scale £3,503 by 12 increments to £7,467 per annum inclusive of London Allowance and supplements for a highly qualified candidate. Preference will be given to an applicant with research experience and qualifications to undertake teaching at undergraduate level with the opportunity to develop departmental research in statistics.

Write for further particulars, enclosing a self-addressed medium sized envelope, to the Personnel Officer, to whom applications should be sent by 18th August, 1978.

PAPUA NEW GUINEA

UNIVERSITY OF TECHNOLOGY

DEPARTMENT OF ARCHITECTURE AND BUILDING

SENIOR LECTURER

Applications are invited for the above-mentioned position. The successful applicant who will be required to teach design, construction, materials etc, must have relevant research and development interests. Experience in developing countries would be an advantage.

Salary range: K14,490 to K16,171. (As at 11 July Kina 1 equalled $A1.23, US$1.42, $NZ1.36, £0.7[illegible].)

Allowances additional to salary are payable as follows: Married K2,500 per annum, Single K1,500 per annum. In certain circumstances a child allowance is also payable. An educational allowance and additional fares may be provided for children being educated away from parents' place of residence. Other benefits include furnished housing (hard goods only) supplied at nominal rental, leave fares to place of recruitment every second year and equivalent fares to Canberra, Australia each alternate year and 6 weeks annual leave. Superannuation benefits apply in most circumstances. Study leave of six months will accrue after 3 semesters of service.

Appointment will be on a contract basis for a maximum of three years in the first instance. The University reserves the right to make no appointment or to make an appointment by invitation at any stage.

The successful applicant would be expected to take up his/her appointment as soon as possible.

Applications in duplicate should include particulars of age, nationality, marital status, family (if any), qualifications, experience, present post and the names and addresses of three referees from whom confidential enquiries can be made. Further information will be forwarded to all applicants.

Applications are required by 31st August 1978 and should be sent to the Registrar, The Papua New Guinea University of Technology, P.O. Box 793, Lae, Papua New Guinea. A copy of application should be sent to the Association of Commonwealth Universities (Appts.), 36 Gordon Square, London WC1H 0PF from whom conditions of appointment may be obtained.

RHODESIA

THE UNIVERSITY

DEPARTMENT OF GEOGRAPHY

SENIOR LECTURESHIPS OR LECTURESHIPS IN GEOGRAPHY

Applications are invited for two posts, one in physical geography and one in human geography. The Department will consider applications from persons with a variety of interests in these aspects of Geography. Candidates should indicate the full range of their interests and abilities as well as their special field of study. Preference may be given to persons whose special fields of study include one or more of the following: Climatology (with Hydrology), Geomorphology (with Biogeography), and Economic Geography.

Salary Scales (approximately sterling equivalent): Senior Lecturer £7,730 by 301 to £[illegible] by 319 to £10,2[illegible]; Lecturer Grade 1, £7,0[illegible] by 2[illegible] to £8,077; Lecturer Grade 2, £[illegible] by 2[illegible] to £[illegible] by 2[illegible] to £[illegible].

Both permanent pensionable terms and short-term one or two year contracts are offered.

Further particulars and application procedure available from the Association of Commonwealth Universities (Appts.), 36 Gordon Square, London WC1H 0PF.

Closing date for receipt of applications August 31, 1978.

British subjects considering applying for posts in Rhodesia are urged to consult the Foreign and Commonwealth Office (telephone 233 3135) or their nearest British Consular Office.

Professor Davies, Head of the Department is in the UK and potential candidates can contact him through the office of the Association.

SHEFFIELD

THE UNIVERSITY

POSTDOCTORAL RESEARCH ASSISTANT IN BIOCHEMISTRY

Applications are invited from men and women for the above post supported by an M.R.C. grant, tenable for three years from 1st October, 1978. The person appointed will work on the sequence of human ferritin and will study the problem of isoferritins. The work will be paralleled by X-ray analysis of the crystal structure of human ferritin. An LKB solid-phase sequencer and other facilities are available.

Salary in the range £3,660 to £4,360 on scale IA.

Further information from Dr. W. Ford and or Professor P. M. Harrison, Department of Biochemistry, The University, Sheffield S10 2TN. Applications including a full curriculum vitae and the names and addresses of two academic referees, to Dr Ford at the above address by 2nd September, 1978. Quote ref: R150/D1.

THE OPEN UNIVERSITY

FACULTY OF TECHNOLOGY—ENGINEERING MECHANICS

ASSISTANT SCIENTIFIC OFFICER

We are looking for a graduate (or holder of an equivalent qualification) to assist members of the academic staff with their research work. He or she should preferably have a background in mechanical engineering and experience of working in a research team and of organising research. A knowledge of mini-computer programming and hardware is essential together with some experience of practical instrumentation. He or she must be able to work without supervision and will be able to call on the assistance of technicians and the services of the workshops. The successful candidate will be encouraged to play a vital part in starting new research projects appropriate to the interests of the Engineering Mechanics discipline.

Starting salary will be on the scale £3,189-£4,601 per annum with possibility of promotion to a higher scale with a current maximum of £6,178.

Application forms and further particulars are available by postcard request please from The Recruitment Office (MH2560 ex), The Open University, P.O. Box 75, Walton Hall, Milton Keynes, MK7 6AL, or by telephone from Milton Keynes 653868 (24 hour answering service).

Closing date for applications: 18th August, 1978.

STIRLING

THE UNIVERSITY

ESTABLISHMENT ASSISTANT

Applications for this post are invited from graduates who have had some years of administrative experience. The duties mainly involve the servicing of various committees which have responsibilities in the staffing area and some previous experience of committee servicing would be an advantage. The post might relate with others in the general administrative area.

Salary will be on the Administrative Scale IA, £3,189 to £6,178 plus USS/FSSU.

Applications, giving full particulars of age, qualifications and career to date, together with the names of two referees, should be sent to the Secretary, University of Stirling, Stirling, from whom further particulars can be obtained, before 14th August, 1978.

SURREY

THE UNIVERSITY

HOME ECONOMICS DEPARTMENT

RESEARCH OFFICER

A vacancy has occurred for a Research Officer in the research programme on lighting practice in the home carried out under the direction of Dr Arthur Tarrant, I.C.I.S. Fillum. A graduate is required to carry out lighting measurements in a large number of individual homes, and the person appointed must be capable of successfully interviewing householders. The post is financed by the SRC and the [illegible] and will be tenable up to Mar 1981. The person appointed (male or female) would be expected to proceed to the degree of PhD.

The salary will be on the scale commencing at £3,189 per annum.

Further particulars of this post may be obtained from the Assistant Secretary (Personnel), University of Surrey, Guildford, Surrey GU2 5XH, or tele Guildford 71281, Ext. 452 and to whom applications in the form of a curriculum vitae, including the names and addresses of two referees, should be submitted by 15 August, 1978.

SURREY

THE UNIVERSITY

RESEARCH FELLOW—DISTRICT NURSE EDUCATION

The Department of Adult Education of the University of Surrey is implementing the new curriculum contained in the "Education and Training of District Nurses" RPN 1976. Applications are invited for a 30-month fulltime appointment of Research Fellow financed by the Department of Health and Social Security. The post would be suitable for a graduate in nursing, education or the behavioural sciences, or a district nurse tutor. The Research Fellow will be expected to assist and support the research team in undertaking assessment of the new course and developing general assessment criteria which could be applied nationally for District Nurse education.

The person appointed (male or female) may be eligible to register for a higher degree with the University.

Salary scale and conditions of service are those for Research and Analogous Staff in Universities and the starting salary will be on a scale £3,[illegible] to £6,178 per annum depending upon age, qualifications and experience. The appointment is subject to a satisfactory medical examination.

Further details and an application form may be obtained from the Assistant Secretary (Personnel), University of Surrey, Guildford, Surrey GU2 5XH to be returned not later than Friday 25th August 1978.

WARWICK

THE UNIVERSITY

LECTURESHIP IN OPERATIONAL RESEARCH

Applications are invited for the above post in the School of Industrial and Business Studies, tenable from October 1, 1978, or as soon as possible thereafter. The successful applicant is likely to have some O.R. experience and may have a postgraduate qualification in O.R. He/she will be capable of teaching mathematical programming at undergraduate and postgraduate levels but the teaching will not necessarily be confined to that field.

Salary on initial appointment will be up to £4,851 p.a. on the Lecturer scale £3,660 to £7,308 p.a. (under annual adjustments), with U.S.S.

Further details and application forms from the Academic Registrar, University of Warwick, Coventry CV4 7AL, quoting Ref. No. 51/A/78. Closing date for receipt of applications August 31, 1978.

YORK

THE UNIVERSITY

DEPARTMENT OF POLITICS

TEMPORARY LECTURESHIP

TEMPORARY PART-TIME TEACHING FELLOWSHIP

The lectureship is for 2½ years from January, 1979, and the assistantship for one year from October, 1978. Applications will be particularly welcomed from candidates with interests in problems of the "third world", the U.S.A., modern theories of society, and representative government.

The starting salary for the Temporary Lectureship will be within the first five points (£3,660-£4,601) of the Lecturers' scale. The salary for the Fellowship will be £1,250.

Six copies of applications (one from overseas candidates), naming three referees should be sent by Friday 18th August, 1978, to the Registrar, University of York, Heslington, York YO1 5DD, from whom further details may be obtained. Please quote reference number 6/5[illegible] for Temporary Lectureship and 6/1667.

Fellowships and Studentships

BATH

UNIVERSITY OF

STUDENTSHIPS IN SOCIAL STUDIES OF SCIENCE

Applications are invited for three studentships in the following research topics:

(1) Sociology of statistics.

(2) The sociology of aspects of the environmental debate (e.g. energy, pollution, low level radiation, alternative technology).

(3) As an extension of (2), studies of scientific controversies around risk or policy issues.

Applicants should preferably have graduate or post-graduate qualifications in sociology, but for project (1) a statistician or mathematician would be considered, and for projects (2) and (3) graduates in science or technology may apply. Closing date 18th August, 1978.

Further particulars and application forms from: The Administrative Assistant, School of Humanities and Social Sciences, University of Bath, Bath BA2 7AY.

BRADFORD

THE UNIVERSITY

MANUFACTURING SYSTEMS DESIGN CENTRE

ITT COMPONENTS GROUP

INDUSTRIAL RESEARCH STUDENTSHIP IN COMPUTER-AIDED PRODUCTION CONTROL

University staff have been working closely with ITT Components Group for two years on the development of modern production control systems for [illegible] electrical products. A vacancy has arisen for a further research student to join in this activity to work on the development of visually interactive computer-based control. The project offers an excellent opportunity to learn about exciting modern production control methods whilst solving real industrial problems. The student will register for the M.Phil. degree in the postgraduate School of Mechanical and Manufacturing Systems Engineering and should hold a good Honours degree in Engineering, Applied Science or other appropriate discipline from a British University. A realistic grant will be offered based upon current salary levels for new graduates.

For further information and application form, write to Professor J. Parnaby, Mechanical and Manufacturing Systems Engineering, University of Bradford, West Yorkshire BD7 1DP. Reference DS MS 8.

LEEDS

THE UNIVERSITY

DEPARTMENT OF PHYSICS

Applications are invited for a temporary (fixed-term S.R.C.-supported) postdoctoral RESEARCH FELLOWSHIP, tenable for a fixed period of 3 years from October, 1978, for the development of infrared superconducting transition edge bolometers which are being developed jointly by the Universities of Strathclyde and Leeds. The bolometers are to be used in astronomical investigations. The Fellow will have special responsibility for the development of suitable calibration techniques for the bolometers as well as being involved in astronomical instrumentation. Candidates should have extensive cryogenic and infra-red experience together with a keen interest to participate in team work. An astronomical interest would be an added advantage.

Initial salary will be in the range £3,660-£5,242 of the IA Scale for Research and Analogous Staff (£3,660-£6,178) (under review), according to qualifications and experience.

Applications with curriculum vitae together with the names and addresses of two referees, should be sent to Professor P. L. Marsden, Department of Physics, University of Leeds, Leeds LS2 9JT, by 18th August, 1978.

PAISLEY

PAISLEY COLLEGE

DEPARTMENT OF SOCIAL STUDIES

RESEARCH STUDENTSHIP

Applications for Post Graduate Studentship are invited from graduates with good honours degrees in Social Science to pursue research for M.Phil./Ph.D. in the areas of sociology, social administration, public administration, social history or psychology.

Application by letter giving outline of research proposals to Professor H. N. Ahlquist, Paisley College of Technology, High Street, Paisley PA1 2BE.

LONDON, W.C.2

LONDON SCHOOL OF ECONOMICS

SSRC STUDENTSHIP

COMPUTING IN THE SOCIAL SCIENCES

Applications are invited for a two year studentship tenable from October, 1978, providing an opportunity for a student to read for the M. Phil. or Ph.D. of London University. The research will be linked to the SSRC-financed Programme in Quantitative Economics under the direction of Professor J. D. Sargan, and will be concerned with applications of computing to Econometrics.

Candidates should have a good Honours or Masters degree in Computing with a Mathematics, Statistics background and an interest in Economics. Familiarity with numerical optimization visual display would be an advantage.

Enquiries and requests for application forms should be addressed to the Secretary of the Graduate School at LSE, Houghton Street, Aldwych, W.C.2, at once. The deadline for receipt of completed application forms and academic references is 15 September.

WARWICK

THE UNIVERSITY

RESEARCH FELLOWSHIP IN DEVELOPMENTAL BIOLOGY

Applications are invited for a Postdoctoral Fellowship with the Developmental Biology Research Group in the Department of Biological Sciences. This post is concerned with the analysis of restriction DNA fragments from Tetrahymena ciliate complex: (1) Purification of a number of restriction DNA fragments from Tetrahymena ciliatus variants and their analysis in terms of size, renaturation kinetics and chromosomal location; (2) Analysis of the restriction products of [illegible] electron microscopy. It is a three year post [illegible] SRC and is available immediately.

Initial salary will be on the Research Range IA scale £3,660 to £6,178.

Further details and application forms from the Academic Registrar, University of Warwick, Coventry CV4 7AL, quoting Ref. No. 51/2B/78. Closing date for receipt of applications 21st August, 1978.

Polytechnics

THE POLYTECHNIC HUDDERSFIELD

RESEARCH ASSISTANTS

are required for the following vacancies. Successful applicants should possess a good honours degree or the equivalent in the relevant discipline and be expected to register for a higher degree of the CNAA.

SCHOOL OF ARCHITECTURE **Ref: ACA/211/B**
Successful applicant would work on the development of computer graphics facilities and environmental design applications packages. Facilities available will include a Tektronix 4014 linked to an ICL 2960. Candidates should have a background in either: systems analysis and computer applications or: architectural design with an interest in numerical analysis.

DEPARTMENT OF BUSINESS STUDIES—ECONOMICS **Ref: ACA/209/B**

Applicants interested in one or other of the projects below:

(a) Economic indications in business forecasting
(b) Economic and technological development of the UK carpet industry

DEPARTMENT OF CHEMICAL SCIENCES **Ref: ACA/210/B**

There are a number of posts and the following topics are available:

(a) Heterocyclic Chemistry
(b) Thermal properties of ceramic materials
(c) Reactions of the B lactam antibiotics
(d) The design of catalysts which mimic enzymes
(e) Photochemistry of some pollutants of Urban atmospheres
(f) H - D exchange between the labile protons of polymer molecules and absorbed deuterated solvents.

DEPARTMENT OF MECHANICAL AND PRODUCTION ENGINEERING **Ref: ACA/223/B**
Successful applicants should have a specialist interest in thermo-dynamics or rotating machinery including internal combustion engines.

Ref: ACA/212

Also in the same Department applicants interested in one or other of the projects below:

(a) Stress Analysis: design analysis of rib-reinforced circular plates with unsymmetric support conditions.
(b) Manufacturing Technology: product reliability in high speed casting.

Salary: Research Assistant Burnham Scale (Lecturer 1 point 0), £3,192 per annum. Fixed term two-year contract.

Further details and applications forms, which should be returned by 25 August, 1978, from the Establishment Office, The Polytechnic, Queensgate, Huddersfield, HD1 3DH (Telephone 0484 22288, Ext. 2226).

Lecturer Grade II/ Senior Lecturer

In Industrial Economics

Required from September to teach economics on Business Studies courses and to undertake research in Industrial/Management economics.

Salary £4,101-£7,065 (Bar)-£7,572.

Further details and form of application from the Assistant Director and Chief Administrative Officer, Trent Polytechnic, Burton Street, Nottingham NG1 4BU. Closing date: 14th August, 1978.

TRENT POLYTECHNIC NOTTINGHAM

LONDON, W.1

THE COMMITTEE OF DIRECTORS OF POLYTECHNICS

requires an

ADMINISTRATIVE ASSISTANT

GRADUATE with good understanding of the higher education system, ability to handle figures and [illegible] committee procedures.

Duties include servicing committees, surveying institutional practices, [illegible] collecting [illegible].

Initial salary [illegible] £3,930 according to age and experience.

Apply by letter giving full [illegible] Director, [illegible] Street, London W[illegible].

Closing date 18th August, 1978.

NEWCASTLE UPON TYNE

THE POLYTECHNIC

DEPARTMENT OF MATHEMATICS, STATISTICS AND COMPUTING

SRC POSTDOCTORAL RESEARCH ASSISTANT

Applications are invited for a POSTDOCTORAL RESEARCH ASSISTANTSHIP funded by the SRC [illegible]

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Polytechnics continued

Research Assistants September 1978

Each appointment is connected with a clearly defined research project on which the Research Assistant will work and will normally be expected to register for a Higher Degree of the CNAA. The positions are initially awarded for a period of two years which may be extended subject to satisfactory progress.

Applied Biology & Food Science (Ref. A.1)

Histopathological and ecological study of infestations of marine molluscs...

Architecture (Ref. A.3)

Victorian speculative housing in London.

Division of Construction Science & Materials (Ref. A.4)

Burning characteristics of plastic materials.

Mathematical Sciences & Computing (Ref. A.13)

Mathematical Modelling in teaching the applications of Mathematics.

Nursing & Community Health Studies (Ref. A.15)

Developing methods for the evaluation of Health Visiting practice.

Social Sciences (Ref. A.16)

Comparative examination of Educational policy making and ideology in England and Sweden.

Physics (Ref. A.18(i))

The optical, photoelectric and allied properties of thin films in vacuo.

Physics (Ref. A.18(ii))

Research in radiation dosimetry.

Applicants, quoting reference number, to apply for forms and further details to: Staffing Office, Polytechnic of the South Bank, Borough Road, London SE1 0AA. Tel: 01-928 8989.

Polytechnic of the South Bank

ULSTER COLLEGE

THE NORTHERN IRELAND POLYTECHNIC

Faculty of Technology

PRINCIPAL LECTURER—CIVIL ENGINEERING

Applications are invited for the above appointment from graduates who are chartered engineers, preferably with a higher degree.

Candidates, who should state their lecturing and research interests, must have teaching experience at degree level and on continuing education programmes.

LECTURER II/SENIOR LECTURER —SHIP TECHNOLOGY

Candidates should be graduates with relevant professional qualifications and preferably have an interest in marine structural design.

LECTURER I/II—NAVIGATION

To teach nautical science subjects at various levels in the School of Maritime Studies.

Salary Scales:

Principal Lecturer: £7,047 to £7,818/£8,844; Senior Lecturer, £6,051 to £7,065/£7,572; Lecturer II £4,101 to £6,358; Lecturer I, £3,192 to £5,334

The Polytechnic is a direct grant institution with an independent Board of Governors. It opened in 1971 and now has a student population of some 7,100. It has extensive new purpose-built accommodation, including 750 residential places on the 114 acre campus overlooking the sea at Jordanstown, a pleasant and quiet residential area. There is a scheme of assistance with removal.

Further particulars and application forms which must be returned by August 25, may be obtained by telephoning Whiteabbey (0231) 65131 ext 2243 or by writing to:
The Establishment Officer, Ulster College, The Northern Ireland Polytechnic, Shore Road, Newtownabbey, Co Antrim BT37 0QB.

SUNDERLAND

THE POLYTECHNIC

INFORMATION OFFICER

Salary Scale: N.J.C. S.O.1 £[illegible] to £[illegible] per annum plus a supplement of £312.

The job carries responsibility for press relations, publications, course advertising, mailing shots and internal communications.

Applicants should have good journalistic experience and be able to demonstrate that they are capable of developing the communications function.

An application form and further particulars may be obtained from the Personnel Officer, Sunderland Polytechnic, Chester Road, Sunderland SR1 3SD, and should be returned as soon as possible.

SUNDERLAND

THE POLYTECHNIC

FACULTY OF ENGINEERING

DEPARTMENT OF MINING

CURATOR IN GEOLOGY

Salary Scale: N.J.C. A.P.3 £[illegible] to £[illegible] per annum plus supplement of £312.

Candidates should have training and experience in geology to take responsibility for the curatorial duties of cataloguing, classification and maintenance of the geological collections.

Further particulars and an application form may be obtained from the Personnel Officer, Sunderland Polytechnic, Chester Road, Sunderland, SR1 3SD, and should be returned as soon as possible.

BRIGHTON

THE POLYTECHNIC

FACULTY OF ART AND DESIGN

EXHIBITIONS OFFICER
£3,333-£4,761
(plus £312 supplement)

To manage the exhibitions, exhibition areas and display areas within the Polytechnic, and to advise the Exhibitions Committee on policy and specific exhibitions programmes. Applicants should possess an Honours Degree in Art and Design or Art History, together with proven experience and organisational ability in the field of exhibitions.

Application forms and further details from the Personnel Officer, Brighton Polytechnic, Moulsecoomb, Brighton BN2 4GJ. Tel. Brighton 693655, Ext. [illegible]. Closing date 25th August, 1978.

LONDON, S.E.1

POLYTECHNIC OF THE SOUTH BANK

DEPARTMENT OF BUSINESS STUDIES

VISITING LECTURER IN BEHAVIOURAL SCIENCES

A part-time Lecturer is required to teach Behavioural Sciences (Industrial Psychology/Sociology) on the first and second years of the B.A. and H.N.D. courses in Business Studies.

Apply by letter to Head of Department, Business Studies, Polytechnic of the South Bank, Borough Road, London SE1 0AA.

SHEFFIELD CITY POLYTECHNIC

Yorkshire and Humberside Regional Management Centre

REGIONAL OFFICER

Salary Scale: £9,345-£10,305

This is a new post and the person appointed will be the senior executive officer of the Centre, responsible for control of staff, implementation of policies and maintaining effective liaison throughout the region. The Centre is concerned with management education, training and development to meet the needs of the region and with making effective use of the resources of educational establishments in the region. The person appointed must be able to make a significant contribution to analysing the region's needs and to meeting these.

The post is based within Sheffield City Polytechnic and is at Head of Department Grade VI level. Closing date 31st August, 1978.

Department of Urban and Regional Studies

PRINCIPAL LECTURER IN URBAN LAND ADMINISTRATION/ DEVELOPMENT PLANNING

Salary Scale: £7,047-£7,818 (bar)—£8,844

The successful candidate will be expected to be a subject leader in the above subject area. Applicants should be graduates with professional experience, preferably members of the P and D Division of the RICS and should be prepared to undertake research in Urban Land Administration/Development Planning. Closing date 31st August, 1978.

Department of Biological Sciences

RESEARCH ASSOCIATE IN BIOLOGICAL SCIENCES

Salary Scale: £4,101-£6,558

This is one of two posts of Research Associate created in the Polytechnic to provide leadership and direction of research in specific areas. The research activities of the Department are concentrated mainly in the areas of Microbial Biochemistry, Animal Physiology and Biochemistry.

Applicants must be well qualified and experienced in one of the above areas and have previous experience of research supervision. Recent industrial experience would be advantageous.

The appointment is for a fixed period of three years. Closing date 18th August, 1978.

Department of Electrical and Electronic Engineering

RESEARCH ASSISTANT IN CONTROL ENGINEERING (COMPUTER CONTROL OF WATER SUPPLY)

Salary Scale: £3,608 with an increment of £141

A research assistant is required to join a team working on computer control of water distribution systems. This project is funded by the Science Research Council and will be performed in collaboration with the University of Sheffield, Department of Control Engineering, and the South Eastern Division of the Yorkshire Water Authority. The project will be concerned with both the development and practical application of computer algorithms covering simulation, optimisation, modelling and prediction techniques.

Applicants should have a good degree in engineering, mathematics or computing. A higher degree or industrial experience would be an advantage.

The appointment is for a fixed period of two years. Closing date 10th August, 1978.

Department of Metallurgy

RESEARCH ASSISTANT

Salary Scale: £2,916-£3,330

A research assistant is required to study the Desulphurisation of Iron-Carbon Melts

The study will involve the thermodynamics of slag systems and the kinetics of sulphur transfer from metal to slag under oxidising conditions.

Candidates should have a good degree in Metallurgy or other related subject. Industrial experience would be an advantage.

The appointment will be for a fixed period of three years. Closing date 18th August, 1978.

Department of History

RESEARCH ASSISTANT

Salary Scale: £2,916-£3,330

The successful candidate will work on the origins and early growth of the Sheffield Labour Party. Applicants should hold at least a second class honours degree in an appropriate area and will be expected to read for a CNAA higher degree. The appointment will be for a fixed period of three years.

Requests for an application form in writing only please to the Recruitment Section of the Personnel Department, Sheffield City Polytechnic (Dept. THES), Halfords House, Fitzalan Square, Sheffield, S1 2BB. Completed forms should be returned by 18th August, 1978.

POLYTECHNIC OF WALES STUDENTS' UNION

UNDEB MYFYRWYR POLITECHNIG CYMRU

PERMANENT SECRETARY

Salary Scale A.P. 4/5 (£4,251-£5,057)

If you are a graduate who is looking for a job that is different and anything but routine, then an opportunity exists in the lively growing Students' Union of Wales' only Polytechnic, that is just 20 minutes from the centre of the capital city, Cardiff.

We require someone with sound commercial ability to be the Union's senior member of staff, responsible for servicing committees, research and development of Union projects, managing a small office staff and implementation of financial controls.

Applications, together with full curriculum vitae and the names of three referees, quoting reference 2T, to the President, The Polytechnic of Wales Students' Union, P.O. Box 11, Pontypridd, Mid-Glamorgan CF37 1UF, by Friday, 18th August, 1978.

Further details are available by writing to the above address or by telephoning Pontypridd (0443) 402173 during office hours before 18th August, 1978, or Hengoed (0443) 812895 after 6.00 p.m. (all dates).

Colleges and Departments

SOMERSET

COUNTY COU

SOMERSET COLL ARTS AND TECH

DEPARTMENT AND DES

Wellington Road Somerset

Part-time staff for September following subject

COMMUNICATION (Graphics) 14 hours for the Foundation COMMUNICATION (Graphics) 14 hours for the Integrated course 1st and 2nd year ILLUSTRATION 14 hours week for Regional and S1A courses years of study.

Application forms Head of Department Design.

Librarians

LIVERPOOL

THE POLYTECHNIC

LIBRARY SE

SENIOR LIBRARIAN GRADE C

Applicants should vious library experience include the supervision rary assistants and bility for day to day operations. Evening required during term

Salary scale: £[illegible] plus £312 per annum.

Application forms ther particulars sonnel Officer, Liverpool Polytechnic, Richmond Rumford Place, Liverpool 3HH. Tel: 051-227 45.

Please quote reference 304.

Closing date is from the appearance advertisement.

NORTH-EAST LONDON

THE POLYTECHNIC

LIBRARY

West Ham Precinct

A Subject Specialist RIAN—AP3/4 is needed our Maryland, Romford The successful applicant have special responsibility the field of biological serving the Departments Biology, Paramedical and Biochemistry.

Candidates should be tered Librarians with fication or subject any branch of biological sciences would be an advantage.

Inclusive annual ranges from £3,[illegible] For further details and the Personnel North East London Polytechnic, 10? The Grove E15 telephone 01-555 ing reference: [illegible] ing date: 18th August

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Agreeable small hotel academics, writers, artists, musicians, Primrose Hill near studio also ... —Tel.: 01-722 ... 6133.

CANADIAN LECTURER at University of London college urgently requires August 10, a £200 p.a. nished flat for 3 people 1 child for 1 year. Near station or bus line. Trudel on 373 4468 or write 25E ... dens, London, S.W.5.

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CRANFIELD DOCTORAL STUDIES IN MANAGEMENT

Are you interested in a Practical PhD Project on such subjects as:

- (a) How do Managers Learn?
- (b) Effective Managerial Behaviour?
- (c) Organisation Improvement Theory and Method?

Applications are invited from suitably qualified people to pursue full-time research on any of the above subjects with the Cranfield Management and Organisation Development Centre and under the direction of Professor Charles Margerison. A flexible programme of studies is designed for each candidate, and this will most typically cater for the needs of good honours graduates with some work experience who wish to become management teachers, researchers or staff specialists in business or commerce. A relevant master's degree enables students to complete their studies in two years rather than three.

Some financial assistance will be available. Residential accommodation on campus is normally available for both single and married students.

For more details, contact Professor C. Margerison or The Admissions Office, Cranfield School of Management, Cranfield Institute of Technology, Cranfield, Bedford MK43 0AL. Telephone: 0234 751122, Ext. 239.

SHEFFIELD

EDUCATION

EDUCATION DEPARTMENT IN ASSOCIATION WITH THE E.E.C. AND D.E.S.

EVALUATION OF THE TRANSITION FROM SCHOOL TO WORK PROJECT

Applications are invited for the post of SENIOR RESEARCH OFFICER to carry out an evaluation of a three-year project concerned with improving the transition from school to working life. The project will start in September, 1978, and is funded by E.E.C. and D.E.S. The project will involve pupils from three Sheffield secondary schools in their last two years at school and their first year after leaving school.

The successful candidate, who will be accountable to the Authority's Senior Adviser (Research and Evaluation), should hold good honours degrees in the social sciences or education or a qualification involving educational research. Additional experience in one or more of the following areas would be helpful: teaching, industry, industrial training and working as a member of a research team.

Appointment will be made on the following scale: Senior Research Officer, £5,556 to £5,988.

This post will run from September 1, 1978, or as soon as possible thereafter, to August 31, 1981. Appropriate superannuation arrangements will be made.

Application forms and further details may be obtained from the Chief Education Officer (Teachers Division), P.O. Box 67, Leopold Street, Sheffield S1 1RJ and should be returned within two weeks of the appearance of this advertisement.

LONDON

THE POLYTECHNIC OF NORTH LONDON

DEPARTMENT OF EXTENSION STUDIES

Wanted for October 1st, 1978, RESEARCH ASSISTANT for a one-year appointment to continue the work of developing course materials in English for Academic Purposes. Qualifications and experience in teaching English as a second language, or in foreign language teaching, are desirable. Salary Scale: £3,015 to £3,180 (inclusive of London allowance).

Further details and application form from Mr. D. Kerry, Department of Extension Studies, The Polytechnic of North London, Stapleton House, Holloway Road, N7 8DB.

ST. THOMAS' HOSPITAL

DEPARTMENT OF COMMUNITY MEDICINE

RESEARCH ASSISTANT/ FIELDWORKER

Applications are invited to join a multi-disciplinary team conducting a large-scale investigation on the health and care of the physically disabled in the Lambeth Borough.

The Research Assistant will contribute to the general design, development, and application of social survey research instruments, carry out fieldwork associated with the study, and participate in the preparation and analysis of data for which excellent computing facilities are available.

Academic qualification is highly desirable.

Research experience or computing knowledge are not essential.

Salary, £3,452 to £4,421 plus £554 London Weighting.

Further information may be obtained from Professor W. W. Holland. Applications with the names of two referees should be submitted by August 21st, 1978.

SOUTH YORKSHIRE

THE NORTHERN COLLEGE OF RESIDENTIAL ADULT EDUCATION

RESEARCH ASSISTANT

Applications are invited for the post of RESEARCH ASSISTANT tenable on a three-year contract at the Northern College, a newly established college of residential adult education in Barnsley, South Yorkshire. The successful candidate will be required to help monitor the progress of three Social Action Centres funded by the Joseph Rowntree Memorial Trust in Barnsley, Bradford and Stoke-on-Trent, and will have some teaching duties in the college.

Applicants should have a good first degree in the Social Sciences with relevant experience in research and/or community work. Salary within the first five points of the Universities Research Scale 1B, £3,189 to £4,150, according to age and experience.

Further details may be obtained from: The Registrar, The Northern College, Wentworth Castle, Stainborough, Barnsley, South Yorkshire, S75 3ET, to whom applications should be returned by 31st August, 1978.

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lleges of Further Education

City of Salford

UCATION DEPARTMENT

SSISTANT EDUCATION OFFICER URTHER EDUCATION SECTION

04, £7,044-£7,788 p.a. including supplement.

pplications are invited from suitably qualified and perienced persons for the above third tier post in the ucation Department.

e duties of the post include responsibility for two lleges of Further Education, Adult and Evening ntres, the authority's youth service and careers rvice and various schemes for the 16-19 years age oup. Administrative experience would be an advantage. e post carries a casual car user allowance and sistance with removal expenses will be granted in proved cases.

st reference: 2929/THES.

e post is permanent, superannuable and subject to satisfactory completion of a medical questionnaire. mmencing salary will reflect experience and qualifications. Please write or telephone 061-793 3158 for an plication form quoting post reference number to the rsonnel Manager, Salford Civic Centre, Swinton, M27 ... to whom they should be returned by 11th August, 78.

Colleges of Higher Education

Hull College of Higher Education

FACULTY OF ADMINISTRATIVE AND MANAGEMENT STUDIES

Applications are invited for the following posts which arise from the development of new courses in this expanding Faculty.

Lecturer II/Senior Lecturer in Accounting (2 posts)

Lecturer II/Senior Lecturer in Financial Management

Lecturer II/Senior Lecturer in Law

Lecturer I or Lecturer II in Secretarial Studies

All posts are tenable from 1st September, 1978, or as soon as possible thereafter.

Application forms and further details may be obtained from the address below, to which completed forms should be returned within ten days of the advertisement appearing.

The Personnel Section
Hull College of Higher Education
Cottingham Road
Hull HU6 7RT. Tel: (0482) 41451

MIDDLESEX

HARROW COLLEGE OF HIGHER EDUCATION

Northwick Park, Harrow HA1 3TP

Telephone: 01-864 4411

FACULTY OF SOCIAL SCIENCES—INDUSTRIAL RELATIONS UNIT

LECTURER I in INDUSTRIAL RELATIONS and OCCUPATIONAL HEALTH and SAFETY.

The above post is available from 1st January, 1979, or earlier by arrangement. The successful applicant will be primarily concerned with servicing a range of T.U.C. courses, so that previous experience in this field is desirable.

Salary scale: £3,192-£5,334 plus £403 London Allowance.

Application forms and further details may be obtained from the Administration Office (Ext. 32) to whom forms should be returned within 14 days of the appearance of this advertisement.

Colleges and Institutes of Technology

LOTHIAN REGIONAL COUNCIL

NAPIER COLLEGE OF COMMERCE AND TECHNOLOGY

LECTURER (A) IN ECONOMICS

Salary on scale £4,029 to £7,110 (Bar) to £7,638.

Required in the Department of Industrial and Social Studies. An interest in Labour Economics, Managerial Economics or Industrial Economics would be an advantage.

Applicants should possess an honours degree and preferably have had industrial, research or teaching experience.

Application forms and further particulars from the Academic Registrar, Napier College of Commerce and Technology, Colinton Road, Edinburgh EH10 5DT.

ABERDEEN
ROBERT GORDONS INSTITUTE OF TECHNOLOGY

SCHOOL OF HOTEL AND INSTITUTIONAL ADMINISTRATION

LECTURER

to participate in proposed degree course in Hotel, Catering and Institutional Administration, and existing HND and HCIMA Courses.

Graduate with relevant experience in industry/research—catering management preferred but not essential.

Salary scale in range £4,056-£7,698 per annum.

Assistance with removal expenses.

Details from Chief Administrative Officer, Robert Gordon's Institute of Technology, Schoolhill, Aberdeen, AB9 1FR (0224-574511).

PAISLEY COLLEGE

DEPARTMENT OF ECONOMICS AND MANAGEMENT

LECTURESHIPS IN ECONOMICS

(Readvertisement)
(2 Posts)

Applicants should have a good honours degree in a relevant subject and either a higher degree or relevant industrial experience. The posts are for general economists, preferably with an interest in teaching Labour Economics/Manpower Planning or Public Sector Economics at final honours degree level. One of the posts will be on a temporary basis for 2 years. Appointees will be expected to make a substantial contribution to departmental research.

Salary Scale: £4,056-£7,698.

Placing dependent on qualifications and experience.

Application forms and further particulars from Establishment Section, Paisley College, High Street, Paisley PA1 2BE, quoting reference THES/29/1. Closing date: 18th August, 1978.

(Informal enquiries may be made to Neil Hood, telephone no. 041-887 1241, ext 249.)

Administration

SALFORD

THE UNIVERSITY

ADMINISTRATIVE ASSISTANT

Applications are invited from candidates who possess a degree or equivalent professional qualification for the above post in the Estates and Buildings Division of the Registrar's Department. The duties include the compiling and presenting of reports, committee work and general involvement in the administration of the Division.

Salary according to qualifications and experience within the scale £3,189 to £6,170 per annum.

Further particulars from the Registrar, University of Salford, Salford M5 4WT, to whom letters of application should be sent by 1st September, 1978, quoting reference number A/605/THES.

LOUGHBOROUGH UNIVERSITY OF TECHNOLOGY

ADMINISTRATIVE ASSISTANT

Applications are invited from graduates for the post of ADMINISTRATIVE ASSISTANT in the Department of Chemistry. Duties will be concerned with the day-to-day administration of the Department involving contact with both staff and students.

Salary within scale £3,189-£6,175 p.a. (under review). It is hoped to appoint within the lower half of the scale. Postcard requests for information and application forms to Paul Johnson, Establishment Officer, ref 78/37CM.

Loughborough *Leicestershire*

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oxford polytechnic

Examinations Officer

Salary SO1, £4,920 to £5,256 plus £312 supplements

A graduate is required to take responsibility for the organization and conduct of examinations in the Polytechnic.

Further details and application forms may be obtained from the Deputy Administrator, Oxford Polytechnic, Oxford OX3 0BP.

General Vacancies

PUBLISHER- Arab World ELT Publications

The Longman Group is seeking a Publisher to handle part of its extensive programme of ELT books and audio-visual units for use in schools in the Arab World.

The successful candidate will become engaged in all aspects of List Building, Finance and the general administration of a number of major projects, involving close co-operation with authors, consultants and Arab Ministries of Education, and will be responsible directly to the Manager of the Arab World Department.

Applicants, aged 26+ must have some previous experience in educational publishing and a first hand knowledge of the Teaching of English as a Foreign Language plus a Degree or Teaching Qualification.

A knowledge of Arabic or of the Arab world would be an advantage.

A competitive salary is offered dependent upon qualifications and experience, together with attractive company benefits.

For further details please telephone or write to:

Mrs. S. Etherington,
Personnel and Training Manager (Publishing),
Longman Group Limited,
Longman House,
Burnt Mill,
Harlow, Essex.
Tel: Harlow (0279) 26721.

Longman

THE NATIONAL HOSPITALS COLLEGE OF SPEECH SCIENCES
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require a

LOCUM LECTURER IN PSYCHOLOGY

(1st October, 1978-31st May, 1979)

Applications are invited from lecturers, clinical or educational psychologists for the above post. The successful candidate will prepare students for the present three-year Diploma of the College of Speech Therapists, help coordinate the work of visiting lecturers in psychology, aid in selection procedures and be expected to take an interest in the clinical aspects of the course.

Salary in accordance with Whitley Council Senior Scale. For further details and application form contact the Personnel Department, National Hospitals for Nervous Diseases, Queen Square, London WC1N 3BG. Tel: 01-837 3611, Ext. 65.

Overseas

OVERSEAS TEACHING POSTS

SENIOR LECTURER IN ENGLISH (TEACHER TRAINING)

(HONG KONG)

English Language Institute, The British Council.
Candidates should have an MA in Linguistics or a one-year postgraduate TEFL/TESL qualification plus at least five years' experience in TEFL/TESL which includes teacher training.
Preferred age range 35+.
Salary: £5,681-£7,707 pa.
Benefits: Personal and accommodation allowances and other benefits.
Two-year contract. 78 PO 181

LECTOR IN ENGLISH

(ROMANIA)

University of Craiova.
Graduate in English with TEFL experience and preferably TEFL qualification. Single candidates aged 25-35 preferred. British nationals only.
Salary: 42,000 lei pa tax-free (approx £1,843) paid in 10 monthly instalments plus sterling subsidy of £2,030 pa tax-free paid in Britain.
Benefits: Free accommodation; overseas allowances; one-year Minor Benefit contract, renewable. 78 UU 99

LECTURER IN ENGLISH LANGUAGE

(POLAND)

The Agricultural Academy, Krakow
Candidates should be British Nationals.
Essential qualifications are a first degree in either English, Modern Languages or Science and three years' TEFL experience. MA or diploma in Applied Linguistics or TEFL desirable.
Salary: 73,800 zloties pa tax-free (approx £1,210) plus sterling subsidy of £2,030 pa paid in Britain.
Benefits: Free accommodation; free medical treatment; internal travel reductions; overseas allowances.
One-year Minor Benefit contract, renewable. 78 UU 98

Return fares are paid. Local contracts are guaranteed by The British Council. Please write briefly stating qualifications and length of appropriate experience, quoting relevant reference number and title of post, for further details and application form to The British Council (Appointments), 65 Davies Street, London W1Y 2AA.

THE BRITISH COUNCIL

Western Australia

VACANCIES IN TEACHER EDUCATION

Applications are invited for the following positions at the Western Australian Secondary Teachers College, Perth. Positions will become vacant in January, 1979.

Position:	79/4	Senior Lecturer	Home Economics
	79/5	Senior Lecturer	Media Services
	79/6	Lecturer	Library Studies
	79/7	Lecturer (Audio Visual)	Communications
	79/8	Lecturer (Health)	Physical Education, Health and Recreation
	79/9	Lecturer	Home Economics
	79/10	Assistant Lecturer	Library Studies
	79/11	Assistant Lecturer (Biology) (Temporary)	Science (3 years' contract)
Salary Range:		Senior Lecturer	£12,514-£14,586
		Lecturer	£9,327-£12,253
		Assistant Lecturer	£8,040-£9,210

Qualifications: A higher degree in an appropriate field together with teaching experience at secondary or tertiary level is generally required.

Application forms, detailed statements regarding duties and qualifications for individual positions, and conditions of service may be obtained from:

Migration Liaison Officer,
Western Australia House,
115 Strand, London WC2R 0AJ.

Applications will close with the above office on **Friday, 25th August, 1978.**

All advertisements are subject to the conditions of acceptance of Times Newspapers Ltd, copies of which are available on request.

Principal

Mount Lawley Teachers College

Western Australia

The Council of the Western Australian Teacher Education Authority invites appl from persons with appropriate qualifications and experience for the position of Pr of Mount Lawley Teachers College, a college of advanced education, to succeed Robert Peter, DFC, Foundation Principal of the college, who has signified his inte to retire at the end of 1978.

Mount Lawley Teachers College is a constituent college of the Western Austr Teacher Education Authority. The Western Australian Government has announce intention to abolish the authority and to grant self government to the college und new college board.

The college, located in metropolitan Perth on a twelve hectare site five kilometres f the city centre, was opened in 1970. There are 1,900 full-time, part-time and ex students enrolled in the college in pre-service and post experience teacher educ programmes. The college offers a Diploma of Teaching and a Bachelor of Edu for primary teachers as well as graduate diplomas in art education, intercultural educational technology, special education and physical education.

The Principal is the chief academic and chief administrative officer of the college. cants should possess demonstrated capacity for tertiary education administrativ academic leadership.

The salary for the position is currently $A33,836.

Enquiries concerning the position should be addressed to the Migration Liaison O Western Australia House, 115 Strand, London WC2R 0AJ, with whom applications m "Confidential" should be lodged by the 4th September, 1978.

SYDNEY TEACHERS COLLEGE
(N.S.W., AUSTRALIA)
(A College of Advanced Education)

Head,

Division of Primary Teacher Education

Because of the proposed retirement of Dr. Evelyn McCloughan in January 1979, the Council of Sydney Teachers College is seeking a new Head of the Division of Primary Teacher Education within the College.

Sydney Teachers College was founded in 1906 and is a multi-campus incorporated College of Advanced Education operating under its own governing Council in terms of the Colleges of Advanced Education Act, 1975, and the College By-law. The College caters for the pre-service and in-service needs of about 3,000 students, of which approximately 600 are located in the Division of Primary Teacher Education. Courses are currently offered in the College at diploma, degree and post graduate diploma levels, and a master's degree is planned for introduction in 1978.

The Head, Division of Primary Teacher Education, is responsible to the Principal for the work of the Primary Teacher Education Division, which includes a Children's Centre catering for inner-city children with learning problems in the areas of language, reading, movement and educational play. The Head is the Senior Academic Officer in the Division, which caters for students wishing to make a career of teaching children up to age 12. Consequently the successful applicant will have had specific training and experience in primary education; be currently active in primary education; be a professional primary educator who knows the area to an advanced and technical degree; possess a breadth of vision and scholarship and be aware of current developments in education at the practical, experimental and research levels, and hold post-graduate qualifications in primary education, preferably at a doctoral level.

Salary:
A$28,124 p.a.

General:
Conditions of service include sick leave, recreation leave, long service leave, and a superannuation scheme. The College will provide assistance for travel, removal and if necessary, initial accommodation expenses. A Staff Homes Purchasing Scheme is available.

Applications, in the form of a letter and curriculum vitae, with the names and addresses of two referees, should be in the hands of Mr. R. McLintock, Secretary, Sydney Teachers College, P.O. Box 63, Camperdown, N.S.W. 2050, Australia, (marked confidential), by 8 September, 1978. For further information please contact Mr. McLintock (telephone (02) 660 2855).

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Up to £10,690 (married) £8,008 (single)
Inclusive of TAX FREE supplements*

Qualifications:

Candidates should have a relevant degree of diploma experience in Government Service is essential, Teaching experience would be an advantage.

Duties:

The successful candidates will be under the direction of the Head of Department in Extension and Visual Aids Department. He will be responsible for teaching language and writing skills, Public Administration, Government Procedure, Office Practice and report writing. Full participation in College extra curricular activities will also be required.

*The British Government pays TAX FREE supplements to British Nationals. These supplements are reviewed annually but at the present time are up to £6,474 (married) and £3,792 (single). The salaries quoted are at the current exchange rate with the Kwacha and subject to fluctuation.

As well as salary and supplements you will also be entitled to a TAX FREE terminal gratuity, low cost accommodation and free passages. Together, these add up to exceptional real earnings. The salary quoted is the maximum on the scale and starting salaries will relate to qualifications and experience.

For those receiving supplements the British Government also gives appointment grants, education allowances, car loans, medical aid assistance and free holiday visits for children educated in Britain.

For further information please send full personal/professional details (without obligation and in total confidence), to: Recruiting Officer, Zambia High Commission, 7-11 Cavendish Place, London, W.1.

ZAMBIA

UNIVERSITY OF PETROLEUM AND MINERALS

Dhahran, Saudi Arabia

The Department of Architectural Engineering, University of Petroleum and Minerals, Dhahran, Saudi Arabia, will have faculty positions open for the academic year 1978-79 starting 1 September, 1978. Applications will also be welcomed from suitable candidates who are not available till later.

ARCHITECTS AND ARCHITECTURAL ENGINEERS

with at least three years' teaching and/or practical experience in design, environmental controls, climatology/building science and construction management are invited to apply.

Candidates with doctoral degrees in Architecture or Architectural Engineering are desirable, but M.Arch. graduates are also encouraged to apply.

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18528

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18518

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Don's diary

Sunday

Whatever the weather I know when summer has come: my hay fever bursts out in streaming eyes and nose. Today, truly, summer arrives. Torn between staying indoors drugged, torpid but dry (sensible), and horse riding in a cacophony of sneezing (silly), I opt for the latter. After all, I console myself, it relaxes me (sic).

So, here I am alone, cantering along Chenies gallops gazing across the Chess valley stretched below. There is a quality to riding, for me epitomized when I ride alone. It is to do with the communication between the brute and beautiful horse and man with his slight intelligent edge. I emphasize slight because one thing riding has taught me is that horses possess a degree of what I suppose ought in fairness to be called animal cunning that can quite literally throw the unwary.

Heidi, for instance, on whose expansive back I sit, has spent most of the day carrying refugees from the city round and round and determines a few minutes past the Chess valley vista to turn for home: only my will power persuades her in my direction. Many an unwilling rider has found himself back in the stable yard shortly after departure because at the crucial moment his thoughts were elsewhere.

Monday

The morning I spend expanding a bibliography for one part of my research. As it grows longer I become gloomier. Recently I overheard someone say it takes a masochist to do a PhD. I wonder what pathology motivates me to undertake one part-time.

The day of research reading I had planned is interrupted when I realize I shall have to go into college to supervise the erection of a stand about the journalist courses for Open Week which starts tomorrow. On the way in I drive past my professor who is startled to have a reference document I had promised him thrust in his face.

In college down at the Elephant and Castle chaos reigns. We have prepared a series of panels to show how both students and tutors get into print but there appears to be no stand to assemble them on. Eventually a colleague and I find a spare one amidst the design department's final year exhibition. In our haste to get it to our site in the entrance hall we decide to carry it assembled from the hall down the stairs.

It is a hilarious mistake: the stand jams under the stairs and a highly amused audience gathers to watch three tutors and three students, themselves engulfed in laughter, try to disentangle what has loomed as an immovably large, impossibly shaped construction of ply and aluminium. In the end we admit defeat and sent someone to fetch the Allen key to dismantle it.

Tuesday

Open Week starts with a vengeance: I find myself chairing a careers convention. About a hundred people come—mostly careers teachers and sixth form students—and, unsurprisingly, most of the students want to be journalists. It is gratifying but frightening to realize how much young people want in on a trade which daily grows more precarious.

I liken journalism to the stage. You are as good as your last piece (and the bad ones are remembered by "friends" longer than the good). Like acting to outsiders journalism appears to be all glamour. And like acting what most people not involved forget is that for every star there are thousands of bit players just as vital but largely unsung and unnoticed.

Still they keep pouring in and I should complain.

Wednesday

The Guardian, which I ring this morning, has not heard (as I had) that they are about to begin a regular "media" page. "But we're all media already", a rather haughty female voice explains to me. I grow tired of the debate and hang up.

Surveying all the things I ought to be doing I decide, once again, that I am falling behind in the reading to my research. Gritting my teeth I plough through the first part of a book entitled Negative Dialectics. My double incentive, if that is the correct term, is that I have to give a paper shortly on the Frankfurt School and a magazine wants a review of the book from me.

Later I ring *The Guardian* again, this time with more success as I want them to commission an article from me. Teaching journalism involves a considerable commitment to keep practising it. When I talk to my students, enmeshed in a last minute newspaper they are producing without any direct help from tutors, I see why that commitment is so important.

They trust my judgment more because they can see I face the same problems as them, in writing and in getting material into print.

Broadcasting House: "A sustaining air . . . a commitment to excellence."

Thursday

To Garnett College of Education where I am completing a one year induction course in teaching. Coming as it has on top of everything else, at times in the past academic year I have wondered just where this course fits in. I conclude it does not.

It is surely a bureaucratic idiocy that takes people on as teachers, pays them a full salary, then insists they take a year to learn the business in which they are already working. Most of us on this day release concluded long ago we could have easily assimilated it within a month's full-time course.

My cheerless thoughts about education for the educators are dispelled late in the afternoon when I interview an ex-BBC radio chief for part of my research. We sip tea in the BBC Club in what used to be the Langham Hotel in Portland Place and swap stories about politicians we both have met.

The BBC fascinates me. In the past year I have had a lot to do with its more senior officials who, incidentally, have universally been most helpful. There is a sustaining air—much more evident in the portals of Broadcasting House than in the brasher Television Centre—of a commitment to excellence.

It begins to dawn on me why the BBC is attacked so much by the Whitehouse gang. They recognize that where the BBC confronts the frontiers of public taste it does so with alacrity and aplomb. In the drab 1970s that can be said of few other cultural organizations. The witless whining of these would-be censors is a testimony to their hatred of any representation of life not in accord precisely with the drabness a repressive morality would require as a norm.

Friday

The problems of teachi
ism loom large. In pre
the coming exams, and
their first jobs, I take my
through a session on the
style in writing. It is, I
little later, rather as if I
out to determine the
a best seller before it
written in order to
scribes how to write it.

With these youngsters,
sonal styles are painfully
albeit recognisable, there
too easy line of attack
back on their age and
experience that follows
argument to them, which I
believe, is that where
rently go wrong is in
their own writing at the
the (potential) reader.
best student this line of
is dismissed as specious.
ing I end the class by
everyone to rip into recen
of mine. Needless to say
them to shreds.

At lunch time I go over
City University to listen
Robert Birley deliver the
series of lectures on the
the Press. Afterwards
tion with Ken Morgan
secretary of the Press
agree how pleasant it is
public lecturers still exis
nowadays lectures are eith
laden with densely presen
ments, or they crystal
extended and
seminars.

Saturday

A fitting end to a very
A well respected wine
holding an open day sale.
to get there by 9.00 am
oversleep and arrive at 10

All the staff are pretty
by now and pouring
of wine from endless
bottles. It is a sound
course because the drunk
the more you feel inclin

We stagger home
goodies. I look in my diary
realise I have arranged
another tasting next Wedn
Santé.

Tim

The author is a sociolog
teaches journalism at the
College of Printing.

The American collegiate phenomenon

Steven Muller

Recent opportunity to talk for several days with German university colleagues once more highlighted the fact that the continuing American debate about the uses of post-secondary education is *sui generis*. While dozens of other problems of universities are similar in the two nations, the collegiate—or undergraduate—experience in the United States is unique. Therefore it is difficulty to explain abroad, and virtually defies comparative discussion.

As between Germany and the United States, certain essential purposes of post-secondary education are of course parallel; but they are less revealing than crucial divergences. In both countries one vital purpose of university education is to prepare students to enter the professions.

The fact that in America this preparation is often divided into an undergraduate stage followed by professional school marks a difference, but perhaps not one of the greatest significance. True, students in the Federal Republic must select their field of study before entering university, while many Americans need not select a major subject until the end of their second collegiate year, and can wait even longer to select their specific graduate subject.

But in practice, most American students who seek pre-professional education do in fact select their field before entering college or university, and often must do so if they enter a specialized undergraduate curriculum in engineering, for example, or in agriculture. On the other hand, it is by no means impossible for German students to change their field of study after matriculation in a German university.

Another common purpose of post-secondary education in both countries is to offer polytechnic or vocational training. Here the most notable difference appears to be that in the Federal Republic such training is almost entirely offered in specialized institutions other than universities; while American colleges and universities are so variously and flexibly defined and structured that vocational training may be found anywhere—from the hotel school of a major research university to a secretarial course in a community college.

In addition, post-secondary education in the Federal Republic and in the United States fulfils two other common roles. In both countries the universities produce research scholars at the doctoral level. And in both countries it is true, whether intended specifically or not, that full-time attendance in post-secondary education keeps a number of young people off the labour market; although the American numbers involved here are very much greater, not only absolutely but relatively as well. It should perhaps be added that in both countries the institutions of post-secondary education serve to some extent as a mating ground, but without special effort by the institutions themselves.

Looking at German post-secondary education, one thus sees clearly one set of institutions that offer polytechnic and vocational training; and the universities, which offer professional preparation or the opportunity for a select few to prepare for scholarship. Beyond that, in the Federal Republic, one may note deferred entry into the labour market as a function of full-time study, and may also observe that the university system is very harsh on those who fail to obtain degrees.

Because so much depends on comprehensive examinations given only at the end of an entire course of study, the consequences of ultimate failure are severe to the point of being primitive. Not only is the intended professional career foreclosed for the failed student, but there is nothing constructive on the record to take away by those who have attended a German university for years but cannot ultimately pass their final examinations.

Looking in contrast at post-secondary education in the United States, one is struck at once by the large number of American students who are enrolled without identified career objectives. Unlike Germany, or just about any other country, the United States as a whole national society in effect has open admission to higher education.

Not every secondary school graduate can gain entry to the likes of Harvard or the University of California, but literally anyone so minded—and prepared to make the financial sacrifice involved—can enter American higher education at the collegiate level somewhere. There is no American equivalent to the German *Abitur*, or to A levels, or to any kind of nationally used precollege entry examination. But easy as it is, therefore, to see how fully half of America's high school graduates manage to enter college, this does not answer the question of why they choose to do so.

College—the undergraduate experience—remains, so it would seem, part of the American dream. The reasons are loose, various, and without parallel in Germany, or for that matter elsewhere outside the United States. Here are a few of them.

Asked why they are entering the freshman year of college, American students reply in all candour and earnestness that they want to find themselves. Different factors underlie that assertion. For example, college is an opportunity to live away from one's parents for the first time without yet having had to make a commitment to a career or much of anything else. Also, American secondary schools do not generally push one's education very far—especially in the absence of special institutions—such as the German *Gymnasium*—that offer a more demanding preuniversity education.

There is the American idea that an investment in one's self is always worth making and will make one, somehow, a better person. And there is—sincerely and touchingly—the simple desire to know more, to learn, just for its own sake, which often makes American undergraduates so especially appealing.

Certainly it is true that the American college is not only easy to get into, as we noted earlier, but easy to get out of as well; and that for the student who is not ambitious it can provide a very pleasant environment. The cost of college varies enormously in the United States, but it is generally a fact that the greater one's financial need, the easier financial aid is to obtain. Fewer and fewer persons are excluded from the college experience somewhere for purely financial reasons.

The prevailing course system, with a grade recorded for each course at the end of each academic period in each year, means that a partial record of credits can be accumulated. Such a record can be transferred, interrupted and resumed, or serve some purpose even without completion. It is
barely to pass some cours
doing better at others. As
dential life in particular a
rican college constitutes
group environment that ca
attractive—complete with
and social trappings for
American campus is well

On this basis one can
the "you never know" or
can't hurt" syndrome among
can college freshmen
sophomores. If you are
who you really are or wh
want to do, you never kn
might find out in college.
attending is not necessarily
difficult or unpleasant, it
hurt to try it, at least for a
might even turn out to be
and/or enjoyable.

This may sound all too
hearted, but it is not inten
be. While hundreds of thous
young Americans pursue
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in colleges and universi
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dreds of thousands are also
without such clarity of purp
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college, nor is it their misc
that college will guarantee
job. While their elders
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of the education they recei
continue to matriculate,
bers reduced by a declining
rate, but not as yet at least
widespread misgivings abo
attractiveness of the
collegiate experience.

My German friends and
leagues showed much conc
the proper future size of
university system of the
Republic; for the job pr
facing graduates; and also
who enter the German univ
but fail their ultimate exam
These problems are real and
but American experience is
help in developing answer
American collegiate phen
simply remains too differen
its own inner problems.

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Buddy, can you spare $1,000?

The curious thing about America's current controversy over student financial assistance—the hottest education issue of 1978—is that all sides are concerned only about helping middle income families. Students from poor families are generally thought, rightly or wrongly, to be served adequately by the existing Federal aid programmes, which provide basic grants ranging from $1,600 a year for a student from a poverty level family down to nothing at all for students whose annual family income exceeds $15,000, together with subsidized loans and part-time and vacation jobs.

Statisticians cannot agree whether the costs of higher education are really rising beyond the reach of middle income Americans—families earning between, say, $12,500 and $25,000 a year. Some claim total college and university fees have risen no faster over the past decade than disposable middle class incomes, but in this election year few politicians care to suggest that the middle class squeeze may be a purely psychological problem.

However there is no doubt that it is a much heavier financial burden than in other western countries. Tuition and accommodation cost $4,800 per year today at an average private college and more than $7,000 at institutions with greatest prestige. Although many universities use part of their endowment income to reduce the bills of middle class students, even the most generous require students to raise a lot of money from their families, part-time or vacation jobs, or bank loans.

Even at state universities, average costs are nearly $1,000 a year. Students can only benefit from their *subsidized* tuition if they are state residents; an out-of-state student might as well go to a private institution.

The Carter administration's approach to the problem is to extend the eligibility of the existing array of federal grants, loans and student job subsidies—set up originally to open up higher education to the children of poor families—to middle income students.

Unfortunately, this approach is completely out of tune with the mood of the United States in 1978: against any expansion of government services and strongly in favour of tax cuts. The rival approach, which has made all the running in congress this year, catches the mood perfectly. It would allow all taxpayers to deduct a fixed "tuition tax credit". Worth a few hundred dollars for each son or daughter at college.

A majority in the Senate and the House of Representatives has been won over by the apparent simplicity of the tax credit, in contrast to the bureaucratic complexities of the Department of Health, Education and Welfare's grant and loan programmes. But this simplicity is its greatest weakness: the benefits would be spread thinly to everyone, regardless of income or need, tax credits worth billions of dollars would go to the wealthiest section of the population, which still has plenty of money to pay college fees. The value of the credit—probably $250 or $500—would be insufficient to make much difference to those who really need help.

The administration prefers to use the existing system to direct federal funds at the middle income families who need them. No new bureaucracy would be required. Given a straight choice between the two, this seems more equitable than the tuition tax credit.

But an increasing number of people are coming round to the view that the time is ripe for a much more fundamental change in the financing of higher education. They want college tuition to be paid for by the person who benefits directly from it, the student. He would be lent as much money as he needed to cover college expenses, interest free, and repay it slowly through the tax system after graduation, at a rate dependent on annual earnings.

"Income contingent repayment schemes" of this sort have been suggested from time to time over the past 30 years but the latest version, developed by Boston University president John Silber, and known as the tuition advance fund (TAF), seems to be the most practical so far. In effect it would require students to pay an additional 2 per cent income tax after graduation, to ensure their own access to higher education.

There are drawbacks to TAF. For example colleges would be prevented from cashing in on the new source of student funds by a provision that would stop them raising tuition fees at a faster rate than inflation. To most American colleges and universities this would involve an unacceptable degree of Federal control over financial policy.

Nevertheless TAF, combined with the existing system of non-repayable grants for low income students, is the best available prescription for relieving American families of the financial trauma associated with higher education.

British journeys into space

There is general disquiet among British astronomers about the cost of participation in the European Space Agency programme. And with good reason. For about £40m each year Britain is able to participate in one mission every 18 months—a performance which compares very unfavourably with American launch costs.

There are several causes for this high price. One is the principle of just returns in which a country's financial contribution to a project is returned exactly in industrial contracts, and launching specialized one-off missions, instead of less ambitious series, also leads to rising costs.

Taken with the high costs of developing a European independent launcher, Ariane, and participation in the Spacelab project, this has predictably led to calls for withdrawal from the agency.

However, such a move would be far too drastic and could have severe repercussions for British space research; without a European commitment we would be totally reliant on the Americans who could conceivably become so isolationist that one day they would no longer give us room on their missions.

There are attractions in the present British involvement in both European and American space programmes. With the Americans we get good value but little say in research policy: in Europe we have to pay a large amount, but we do have some say in the direction of projects.

Clearly, then, a continued commitment to Europe's space programme is necessary, although it is no reason for complacently accepting continual high prices and low returns. Our participation in ESA must be linked with efforts to improve its policy and financing.

Certain measures must be considered now. These include the standardization of satellite components; the possible construction of multidisciplinary spacecraft; and a tendency to think less of big, glamorous projects instead of more productive, although less ambitious, missions.

A great deal of work must be done, although Britain should continue to accept that our future in space lies with Europe.

LETTERS TO THE EDITOR

Fighting the real anomaly

Sir,—I understand that rats, when deprived of decent living conditions, respond by fighting one another. What a pity it is that academics exhibit no signs of organizational advance over rats.

From correspondence and news items in *The THES* it appears that we are responding to a two-pronged governmental attack on real wages and on general educational expenditure (reducing the number of jobs available and the conditions their incumbents enjoy) in the following ways:

Universities want to take something from the polytechnics.

Poly L1 and L2 staff want to take something from poly SL and PL staff.

Poly S1 and PL staff want to take something from FE staff.

"Very able postgraduates looking for posts" want to pinch jobs from "tenured mediocrities" (Mr Grayling's letter, *THES* July 28).

We are all, in other words, engaged in ignoring the real villains and in attacking one another—a dangerous game to start, for where will it stop? Why shouldn't primary school teachers take something from the comparatively privileged FE L1? Why shouldn't unemployed manual workers object to money being wasted on "very able postgraduates" who have no chance of getting jobs? And who is to decide what constitutes merit, by the way, if the tenure system is scrapped—or isn't that a problem at Magdalen College?

How about this as an alternative to mutual back-biting: A concerted, united campaign (i) against cuts in educational spending, (ii) against the erosion of real incomes, (iii) for early retirement at 60 or 55 to generate more jobs (with full pension rights extended)? And how about a single teacher trade union to fight such a campaign, while we're about it?

Yours faithfully,
JEREMY HAWTHORN,
Department of languages and cultures,
Sunderland Polytechnic.

Sir,—May I be allowed to reinforce Mr Ian Howarth's observations by a slight correction to his letter on this subject? (*THES*, July 28).

In fact, the statement of duties, terms and conditions of appointment sent out with the "further particulars" of lectureships at the University of Lancaster contains the following reference to annual holidays:

"You will be entitled to reasonable periods of holiday, but these are not prescribed in detail. The holiday year, however, runs from October 1 to September 30 and for those who join or leave the university in the course of a holiday year, the annual entitlement is deemed to be five weeks in addition to such statutory bank or public holidays as may fall outside university terms."

Yours faithfully,
R. S. BOUMPHREY,
Establishment Officer,
The University of Lancaster.

Lecturing conceptions

Sir,—Professor Thody is to be congratulated for pointing out the dangers of pre-packaging materials for our students and presenting them with sensitively encapsulated performances. Schoolmasters have called this the sheath method of teaching and it is known to be effective against conception in 90 per cent of cases. There are other methods which are even more effective in preventing conception. These are the method of *cognitus interruptus* and the rhythm method and both are much in vogue.

Cognitus interruptus requires the student to ask questions just as one is working up to a highly satisfying climax in a lecture. If one wants conception one must ban student questions from lectures.

The rhythm method requires more careful control if it is to be effective. It involves the management of discussion in seminars. By being sensitive to the ebb and flow of student contributions the temperature of the debate can be monitored. By making sure that everyone takes part in a warm but not hot atmosphere the emission of seminal ideas can be so managed that they are never fertilized.

Some of us are so alarmed at the fall in the rate of conception in British universities as a consequence of adopting these methods that we are conducting research into alternative teaching procedures. Professor Thody will be glad to hear that our preliminary investigations suggest that total abstinence seems to be rather effective.

Yours sincerely,
CHARLES DESFORGES,
Department of educational research,
University of Lancaster.

Sir,—Had I not been at Leeds University at the time that Professor Thody was making his videotape and known him to be a bit of a joker, I might have taken his comments under the heading "In praise of bad lecturing" (*THES*, July 21) more seriously. But I take it that he was writing with tongue in cheek.

However, in case others should have been misled I think it worth pointing out that bad lecturing—which, alas, is all too common, deliberate or not—can have some unforeseen repercussions.

If a lecturer or group of lecturers get a bad reputation it will eventually put future students off altogether fro mtaking that course or even coming to that university.

Yours faithfully,
G. O. GIBB,
Director of Audio-Visual Services,
University of Edinburgh.

Strathclyde bridges gap

Sir,—In view of the defeatism sometimes found in universities in the face of real difficulties in making links between academic research and the world of practical affairs, it is important to correct the assertion by Martin Bulmer that there is no university based centre for survey research in Britain ("Gulf between research and policy", *THES*, July 7). The Strathclyde Area Survey Unit, directed by Dr J A Brand, is successful proof to the contrary.

The unit was founded in 1972, with the assistance of a three-year grant from the SSRC, and it has flourished since with the support of research contracts from a variety of public sector agencies in Scotland, as well as the University of Strathclyde. Its survey work covers a variety of topics.

Yours Faithfully,
GUSTAV JAHODA,
Professor of psychology and convener of the steering committee,
Strathclyde Area Survey Unit.

Ramsey and the 'Tractatus'

Sir,—May I answer the questions raised by Brian Carr in his review of my new edition of Frank Ramsey's majors papers (*THES*, July 21) I too regret the omission of Ramsey's review of the *Tractatus*, and of the Epilogue, but such excisions were part of the price that had to be paid for including the economics papers, which have down the years declined in accessibility as they have grown in importance.

Of previously unpublished material, to which Mr Carr refers, there appears here Ramsey's first theory about the difference between laws of nature and accidentally true generalizations, which is still of the greatest interest and importance in spite of his own subsequent repudiation of it.

None of the other unpublished material, which as I stated in the preface Professor Braithwaite kindly allowed me to inspect, was worth publishing; in particular the extremely fragmentary and inconclusive drafts of Ramsey's projected treatise on logic.

Given Ramsey's broad conception of logic, however, there is a clear sense in which much of the content of that treatise is published, in Ramsey's papers on probability, on causality, on theories, on facts, belief and truth. There is no use in pining for what else Ramsey might have done had he lived, much as we may guess that it would have exceeded our efforts; we must get on without it as best we can!

Yours sincerely,
D. H. MELLOR,
Lecturer in philosophy,
University of Cambridge.

CDP funding

Sir,—I feel obliged to respond to the singularly one-sided item carried in *The THES* (July 28) on the subject of the funding of the Committee of Directors of Polytechnics. As readers will have noted, the article contained no observation from the body most concerned.

In an endeavour to add some balance to the discussion, I would first draw attention to the objects of the CDP. Primarily our endeavour is to further the development of the polytechnic concept in higher education, thus the activities of the CDP have nothing to do with beating the backs of the local authorities. Directors of polytechnics have a unique vantage point as institutional managers and occasionally their viewpoints may not always coincide with those of other bodies which necessarily have only a limited insight into the operational problems.

Your article speaks of some local authority representatives arguing that the CDP should be closed on the grounds that it performs no useful function. It could be that such observers had no sympathy with the concept that the polytechnics should be developed as the major alternatives to university education.

Whatever the underlying motivation of those commentators the facts are that nationally the polytechnics have demonstrated their appeal by an unparalleled growth rate. For example, over the past five years, their full-time and sandwich enrolment has grown by 50 per cent, a figure well in excess of both the growth of HE generally and that experienced by the longer established and better endowed university sector. Primarily that growth has sprung from action within the polytechnics at all levels.

While the local authorities' approval and support is necessary for the financial provision to effect the work of the polytechnics, in practice, the success of the polytechnic concept depends on the willingness of students to respond to the opportunities the polytechnics present. The CDP believes that its activities play some part in this success. The fundamental test is not what distant observers think but the market response. The CDP sees the decade since the first polytechnic designation as a great success story, achieved against considerable odds.

The activities of the CDP are many sided and most of them are not readily quantifiable in cost-benefit terms.

However, a straightforward, if mundane, example can be provided. The CDP advertising convention is estimated to have saved at least £500,000 of competitive advertising over the past five years.

It must be difficult for some of our critics to feel sure of the facts on which they base their argument. The position is that the CDP does not report its activities to the local authorities, either collectively or individually. Uneasily aware of this communication gap, we approached CLEA suggesting regular consultative meetings on matters of mutual concern. The proposal was not accepted. It must be concluded that reports of the CDP occasional public announcements are being used as a basis for assessing the nature, range and effectiveness of it total activities.

Given the above circumstances, it needs to be said that the CDP recognizes that the funding of its central collective activity is channelled through inappropriate routes. The expenditure levels involved are not vast—currently 0.01 per cent of the total polytechnic expenditure. We see every reason why the directors of polytechnics should operate a collective intelligence unit similar to that whereby the Committee of Vice-Chancellors and Principals of universities assist the coherent development of the university sector.

Yours sincerely,
DAVID BETHELL,
Chairman,
Committee of Directors of Polytechnics.

Letters for publication should arrive by Tuesday morning at the latest. They should be as short as possible, and the editor reserves the right to cut or amend them if necessary.